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November 2013

### Russula Notebook 4

L. R. Hesler

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*R. chamaeleontina* Fr., *Epicr. Myc.*, p. 363. 1838. Spores 8-9 x 6-8  $\mu$ , ellipsoid, warts 0.2-0.3 (0.5)  $\mu$  high, a few fine lines or isolated. Pleurocystidia few, 46-62 x 6-9  $\mu$ , mostly slender-clavate, more rarely ventricose-appendiculate, empty or granular; cheilocystidia inconspicuous, 20-26 x 6-8  $\mu$ , clavate, granular or empty, slightly acute. Cuticle a bed of closely packed, gelatinous hyphae, bearing a turf of hyphae, many of which are cystidioid, - the cuticle 125-200  $\mu$  thick. No pilocystidia.

*Singer (Sydowia 5: 470) says this name is in doubt.*

RUSSULA CALIFORNIENSIS Burl.

Mycologia 28:262. 1936

Pileus 8.5-24 cm. broad, convex, expanding-depressed, old blood-red to peach red or coppery red, center at times Naples yellow, viscid, cuticle separable, glabrous, margin even or obscurely striate-tuberculate. Context white then pale gray, especially in the stipe (in age); odor not distinctive, taste acrid when young.

Lamellae sinuate, attached with a tooth, rounded in front, flesh color or pale ecru, many forking near stipe and a few elsewhere, close, acrid at all stages.

Stipe 1.3-4 cm. x 8-10 mm. (cm.), or 18 cm. x 7.5 cm(?), white then pale gray in age, stuffed.

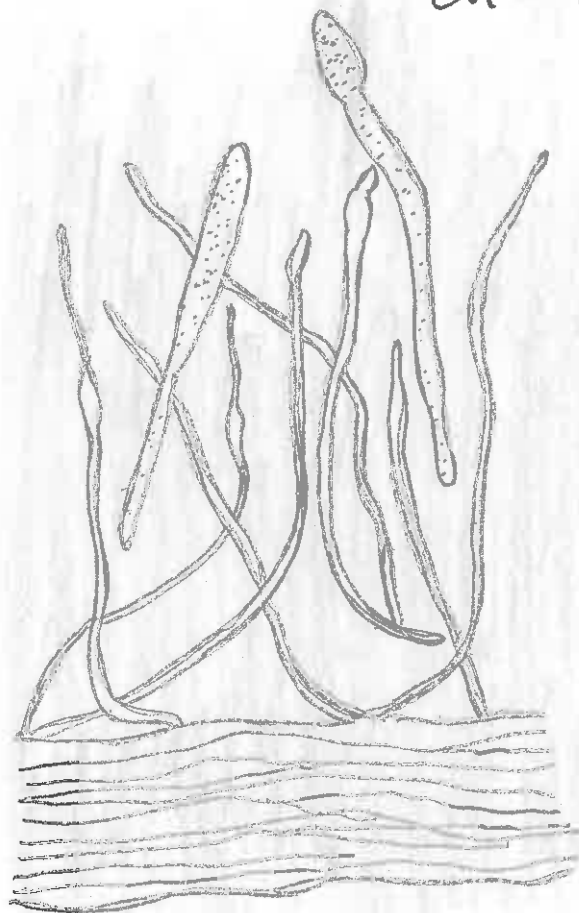
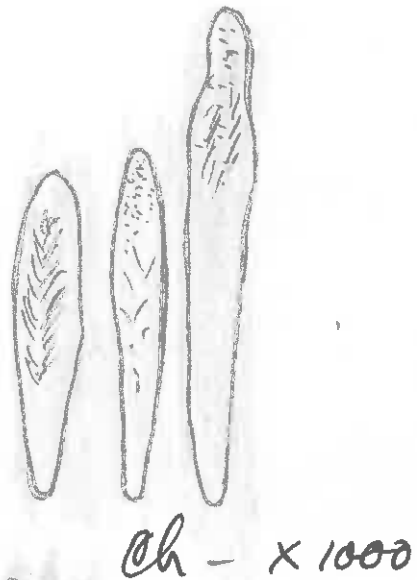
Spores (7) 8-11 x (7) 8-9  $\mu$ , ellipsoid, warts punctate, or 0.1  $\mu$  high or less, with connecting bands and lines forming a complete reticulum (more rarely partial), in mass: E or F. Pleurocystidia 62-77 x 10-13  $\mu$ , clavate, sub-acute or mucronate, banded; cheilocystidia 42-66 x 7-10  $\mu$ , clavate or subcylindric, granular or banded. Subhymenium of small cells. Cuticle a broad zone of gelatinous, more or less tangled to erect hyphae with scattered pilocystidia, - of the emetica-type. Hypodermium conspicuous.

Habitat, habitat, and distribution. - Under pine and live oak, California, Dec-Jan.

Observations. - Burlingham gives the spores 9-10 x 7.5-8.75  $\mu$ , variable warts, some bands and lines. The microscopic characters above are based on a study of the type, which was from Pacific Grove, California, Jan. 14, 1948.

Differs in color change of the flesh of the stipe and the pileus, in age or as it dries.

*Russula californiensis* Burl.  
Type



Cuticle - x 1000

RUSSULA CESSANS Pearson

The Naturalist (1950):101. 1950

Pileus 2-4.6 cm. broad, convex, soon depressed, frequently umbonate or subumbonate in the depression, dull vinaceous purple to purple crimson, often with olive color between margin and disc, viscid, pellicle separable half-way, even, becoming tuberculate-sulcate. Context white, unchanging; odor none, taste mild or rarely slightly bitter-mawkish.

Lamellae adnexed-subfree, whitish, then cream, then yellow to ochraceous, crowded to subdistant, simple or forked, rarely a few lamellulae.

Stipe 2-6 cm. x 4-14 mm., white, unchanging or becoming slightly sordid-cinereous-glassy in age, glabrous, equal, or tapering either way, solid, then stuffed-hollow.

Spores 7.8-13 x 6.4-10.3  $\mu$ , orn. 0.8-1.4  $\mu$ , IIIb, and IIIb-II, in mass: G-H. Macrocytidia 32-60 x 7-12  $\mu$ , clavate or ventricose, often appendiculate, on sides and edges. Epicutis gelatinous, with dermatopseudocystidia, granular or banded; hypodermium present.

On soil, under conifers, Europe, England, Michigan, summer and fall.

Differs from nauseosa in mild taste. This is R. turci of Singer (Monographie); this name now abandoned by Singer because of its ambiguous use.

RUSSULA CHAMAELEONTINA Fr.

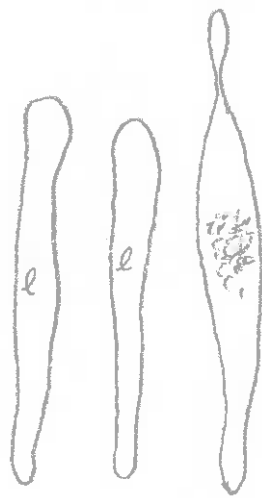
from Julius Schaeffer's Herbarium

Spores 8-9 x 6-8  $\mu$ , ellipsoid, warts 0.2-0.3 (0.5)  $\mu$  high, a few fine lines or isolated. Pleurocystidia few, 46-62 x 6-9  $\mu$ , mostly slender-clavate, more rarely ventricose-appendiculate, empty or granular; cheilocystidia inconspicuous, 20-26 x 6-8  $\mu$ , clavate, granular or empty, slightly acute. Cuticle a bed of closely packed, gelatinous hyphae, bearing a turf of hyphae, many of which are cystidioid, - the cuticle 125-200  $\mu$  thick. No pilocystidia.

(This was omitted from my paper on Schaeffer's Russula - because of the confusion which surrounds the name.)

*Russula chamaeleontina* Fr.  
f. Schaeffer's Herbarium

Omit



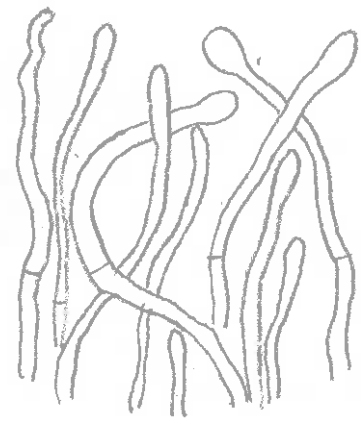
Pl - x 1000



x 3000



Ch - x 1000



Cuticle - x 1000



RUSSULA CHAMAELEONTINA Fr.

Notes on Peck's Collection, Sand Lake, August 7, 1906

Spores 7.5-9 x 6.5-8  $\mu$ , ellipsoid to subglobose, warts 0.3-0.5  $\mu$  high, few short fine lines, Schaeffer 3b-28. Pleurocystidia 50-62 x 7-11  $\mu$ , not always conspicuous, clavate to subfusoid, apex pointed to mucronate, banded; cheilocystidia 35-48 x 8-10  $\mu$ , clavate to fusoid, apex round to acute, at times appendiculate, empty. Gill-trama vesiculose. Subhymenium of small cells. Epicutis of erect to ascendant hyphae, about 1.5-4  $\mu$  broad, with more or less rounded apices, at times tending to occur in tufts, or scattered, with rather numerous, clavate, banded, pilocystidia, 35-110 x 5-7  $\mu$ .

Pussula chandelionia Fr.

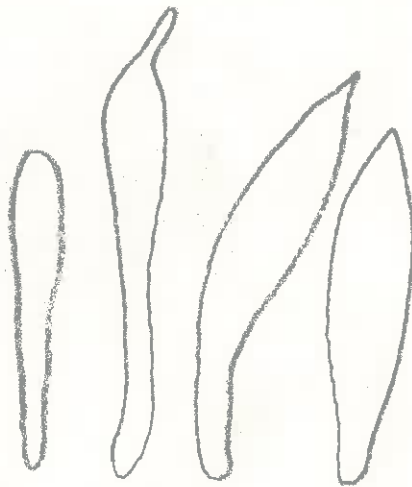
Beck's Coll., Sand Lake, Aug. 7-'06



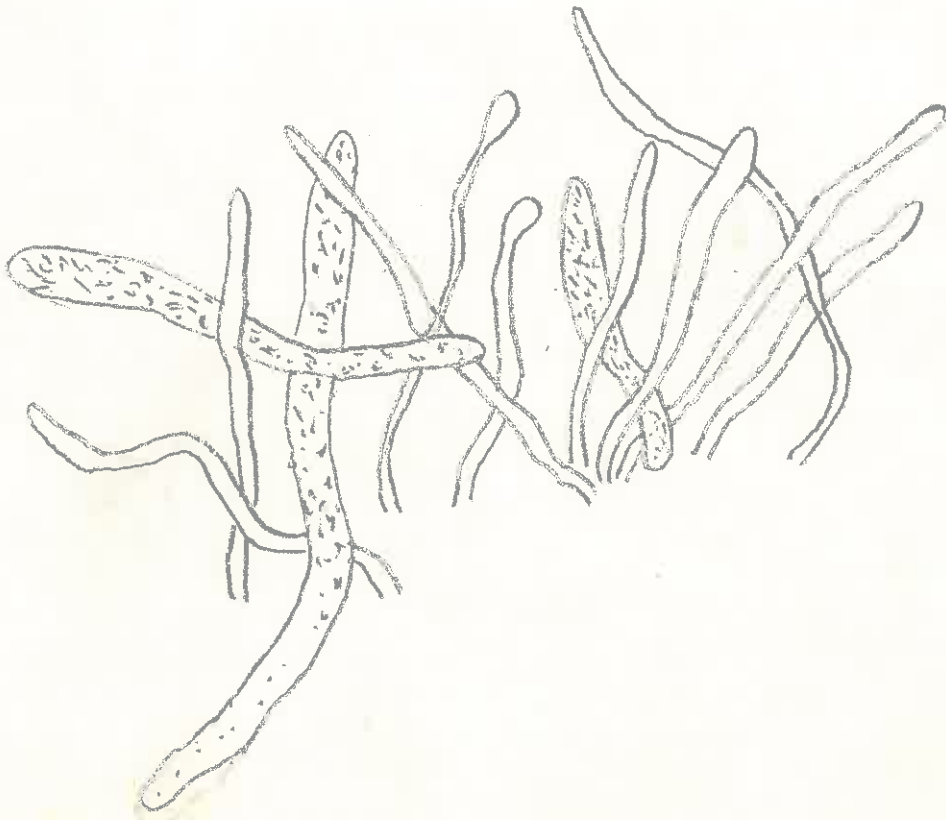
x 3000



Pl. - x 1000



Ch. - x 1000



RUSSULA CHLORINOSMA Burl. ~~Russula~~ <sup>5</sup> ~~Stroph~~

Mycologia 16:22. 1924

Russula maculosa Murr. Lloydia 6:212. 1943.

Russula subglauca Murr. Lloydia 6:217. 1943.

Pileus 4-8 (11) cm. broad, convex and more or less umbilicate, then expanded-depressed, finally arched, white, frequently with "honey yellow" to "raw sienna" rusty spots, or with a pale glaucous tint, often with areolae (as in R. crustosa) and cracks, dry or slightly viscid, cuticle scarcely separable, margin at times sulcate. Flesh white, rarely brownish or melleous where injured, more often unchanging, thin or medium thick; odor none, or more often of chloride of lime, taste mild. Lamellae adnexed to decurrent, often seceding, white then pale cream, unchanging or pale brown where bruised, narrow to medium broad, crowded to nearly close, equal or short ones at margin, often forked behind. Stipe 3-6 (9) cm. x 10-30 mm., white, at times with spots (as in pileus), subequal or at times tapering either way, solid.

Notes on R. maculosa (Murrill collection)

Spores 6.5-8 x 4.5-6  $\mu$ , ellipsoid, warts 0.1-0.2  $\mu$  high or less, punctate, and warts isolated or with some fine lines, in mass: Crawshay A or between A and B. <sup>(faintly cream, -Burl.)</sup> Pleurocystidia 40-70 x 6-9  $\mu$ , fusoid or ventricose, apex acute or capitate, empty or banded; cheilocystidia 37-42 x 3-7  $\mu$ , few, absent in some sections, fusoid to subventricose, subcapitate. Epicutis of the Virescens-type.

(more, next page)

Habitat and Distribution. - On soil, in oak-pine woods, Tennessee, Alabama, Florida, May-November.

Discussion. - Singer (Sydowia 11:196) says that it differs from related ones in its lack of pigmentation in the pileus, mild taste, homomorphous gill-edges (I found a few cheilocystidia in R. maculosa), and characteristic odor; often mis-identified as a bleached R. virescens (which does not occur in Alabama and Florida). (See Singer: Sydowia 11:193)

RUSSULA CHLORINOSMA Burl.

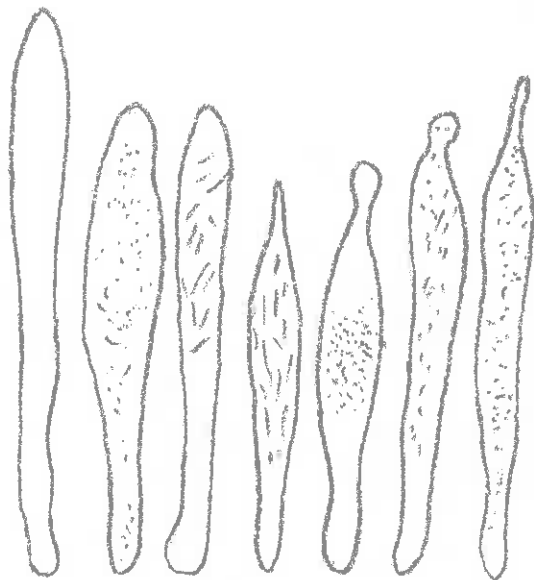
Notes on Type (?)

(Type Data: one box borrowed from N. Y. Botanical Garden, Russula chlorinosma Burl., Burke No. 799, Montgomery, Alabama. Dr. Clark T. Rogerson, in a letter dated March 6, 1959, states that this is what appears to be the type. But, Singer (Sydowia 11:195) cites R. P. Burke's specimen in H. A. Kelly's Herbarium No. 1927, MICH, as the type of R. chlorinosma.)

Spores 7-8.5 x 5.5-6.5  $\mu$  (not many found), ellipsoid, minutely warty, warts 0.1  $\mu$  high, often isolated or with a few fine lines, Singer VI, VII. Pleurocystidia 50-74 x 6-10  $\mu$ , versiform: ventricose, clavate, fusoid, apex rounded, capitate, acute, or appendiculate, granular or banded; cheilocystidia 38-63 x 3-8  $\mu$ , fusoid, at times constricted, apex rounded or acute, empty or granular. Epicutis a zone of interwoven hyphae bearing pseudoparenchyma which in turn given rise to *surface*<sub>x</sub> trichodermial, septate elements, - the virescens-type.

Russula chlorinosma Burl.

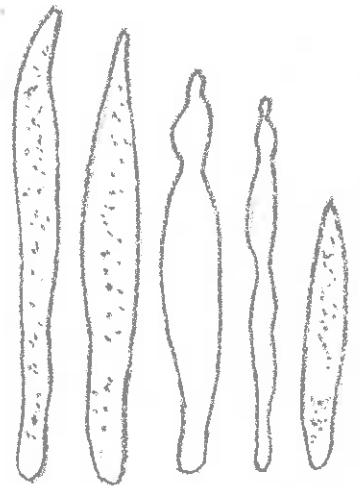
Type (?) Burke's No. 799.



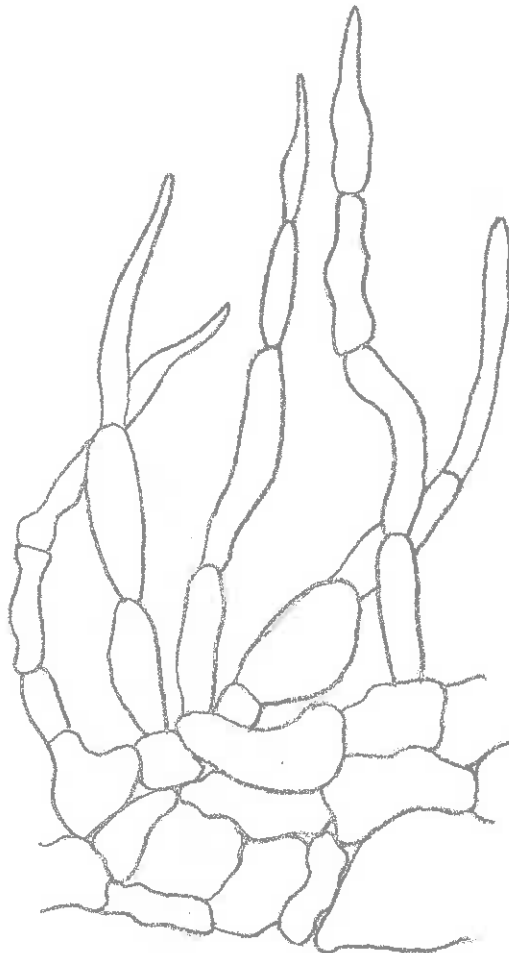
Pl. - x 1000



x 3000



Ch. - x 1000



Epicutis - x 1000

Pileus 7 cm. broad, depressed, "buckthorn brown," dry, cuticle somewhat separable part way, surface with darker brown, removable, scale-like patches, margin coarsely striate. Context white, fragile; odor and taste mild.

Lamellae adnate, cream color, none short, some forking behind, close, rather narrow.

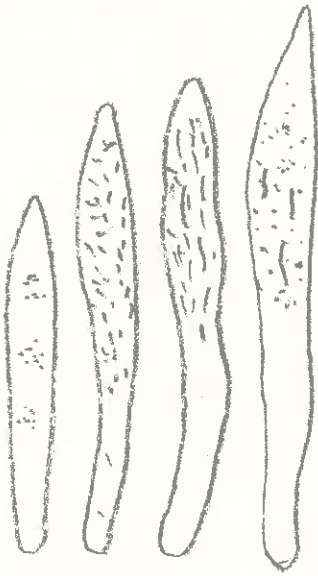
Stipe 5 cm. x 17 mm., dingy white, equal, spongy.

Spores 6-7 x 5-6.3  $\mu$ , ellipsoid, or subglobose, warts 0.1  $\mu$  or less in height, isolated, a few short-catenulate, with some fine lines, Singer IV, VI, VIII, in mass: C or near D, Crawshay. Pleurocystidia 43-74 x 6-9  $\mu$ , ventricose, apices rounded or acute, banded, granular, or empty; cheilocystidia 42-50 x 5-7  $\mu$ , ventricose, apices more or less capitate and tapering, banded or granular. Epicutis of the virescens-type, with scattered or tufts of more or less subulate hyphae arising from the surface of a pseudoparenchyma zone 6 or 8 cells deep.

Habitat and Distribution. - On soil, deciduous woods, Cades Cove, July 25, 1958.

Discussion. - This is near R. crustosa, but differs in its dry pileus. A variant of R. chlorinosma.

*Russula* No. 23058  
*chlorinorma* Buv. l.



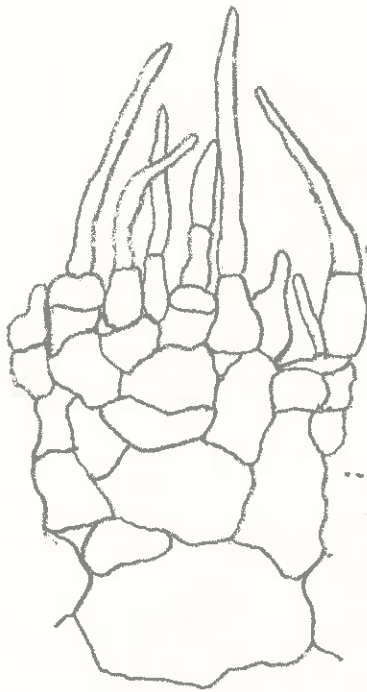
Pl - x 1000



x 3000



Ch - x 1000



... Epicutis - x 1000  
*Virescens* - type

... Hypodermium, or  
subcutis



RUSSULA MACULOSA Murr.

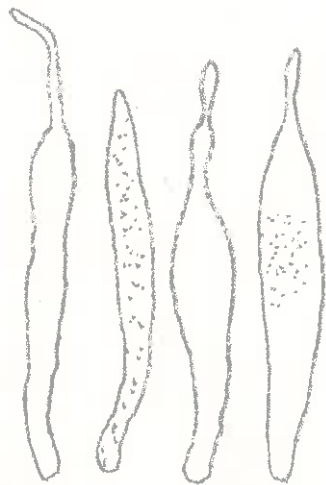
Lloydia 6:212. 1943

Notes on Authentic Collection

(Coll. & Det. Murrill)

Spores 7-8.5 x 5-6  $\mu$ , warts 0.1  $\mu$  high, rarely more, isolated or with fine lines, Singer IIIb, VI, V. Pleurocystidia inconspicuous, few, 50-63 x 5-8  $\mu$ , clavate, fusoid, acute or appendiculate, empty or granular; cheilocystidia 37-44 x 4-5  $\mu$ , fusoid, clavate, obclavate, acute or mucronate, empty or granular. Epicutis of the virescens-type, - trichodermium of constricted cells, which are progressively larger downward, the trichodermium arising from a zone of pseudoparenchyma.

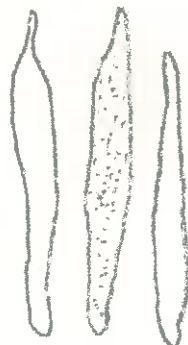
*Russula maculosa* Murr.  
(Not the Type. Call. & det. Murrill)



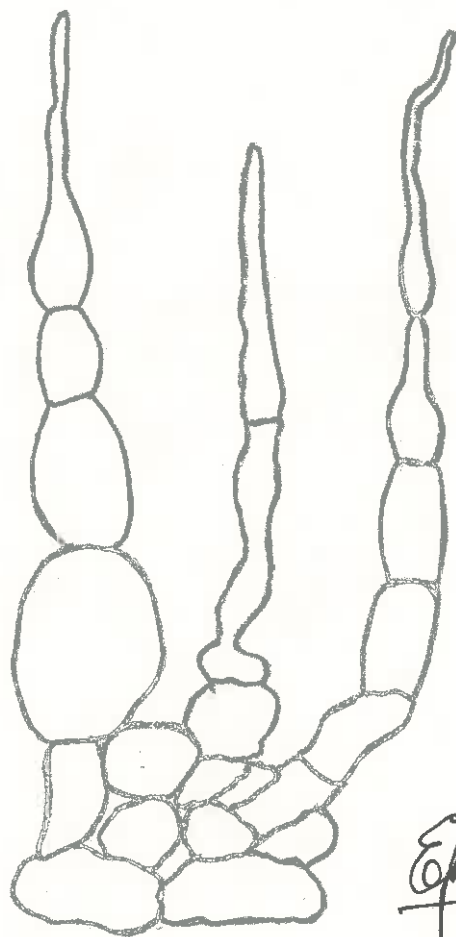
Pl - x 1000



x 3000



Ch x 1000



Epicutis - x 1000

RUSSULA SUBGLAUCA Murr.

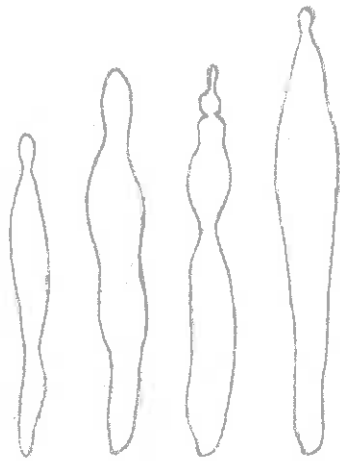
(a synonym of Russula chlorinosma Burl.)

Notes on Part of Type

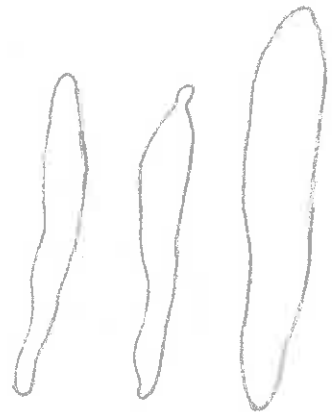
Spores 6.3-8.5 x 4.5-6.3  $\mu$ , ellipsoid, warts 0.1  $\mu$  (rarely 0.2  $\mu$ ) high, isolated or with a few fine lines.  
Pleurocystidia 42-60 x 5-8  $\mu$ , fusoid, at times constricted, apices with a button-like mucro, empty; cheilocystidia 41-54 x 5-9  $\mu$ , clavate, acute or mucronate, empty. Epicutis of the virescens-type.

Russula subglauca Murrill

Part of Type



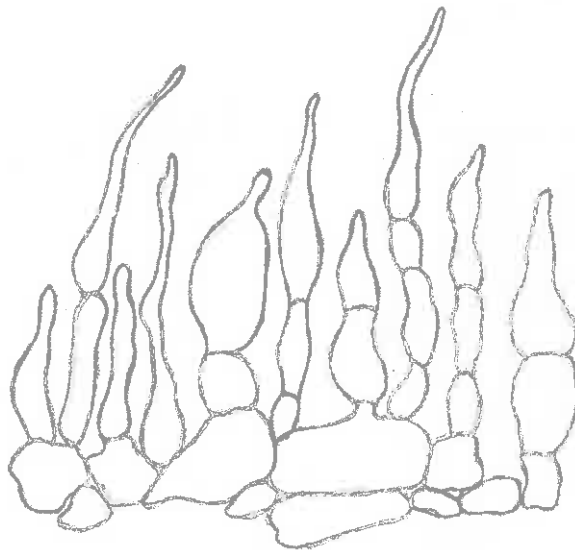
Pl. - x 1000



Ch. - x 1000



x 3000



Epicutis - x 1000

RUSSULA CINERASCENS Beardslee

Elisha Mitchell Sci. Soc. Jour. 33:164. 1918

Pileus 8-14 cm. broad, convex, expanding-convex and depressed, glabrous, viscid, cuticle separable one-third to one-half way to disk, color variable: dull flesh-red to cinnamon buff, "Sanford's brown" or paler, finally fading to sordid gray, with olive, ochraceous, or vinaceous tints, margin becoming striate. Flesh white, in age becoming cinereous; odor and taste mild. Lamellae narrowly adnate, white then pale cream, rather close, broad, some forking behind, none short. Stipe 5-15 cm. x 15-40 mm., white, becoming red then gray or black when wounded, at maturity cinereous and spongy within.

Spores 7.5-9 x 6-7.5  $\mu$ , ellipsoid, warts 0.1-0.2  $\mu$ , isolated or with some fine lines, VI, IIIb (spore-print failed). Pleurocystidia 50-65 x 6-9  $\mu$ , fusoid or subclavate, some appendiculate; cheilocystidia 44-56 x 6-8  $\mu$ , fusoid to cylindric, apices rounded or mucronate. Epicutis a turf of slender hyphae, with pilocystidia.

Notes on Beardslee's Collection

Data on Collection Studied: Collection borrowed from New York Botanical Garden Herbarium, in box, labelled Russula cinerascens Beardslee, Asheville, N. C., Aug. 1917. The label was marked (printed): "Herbarium of H. C. Beardslee."

Spores 7-9 x 6.3-7.5  $\mu$ , short-ellipsoid, warts 0.2-0.4  $\mu$  high, isolated or with some fine lines, at times short-catenulate,

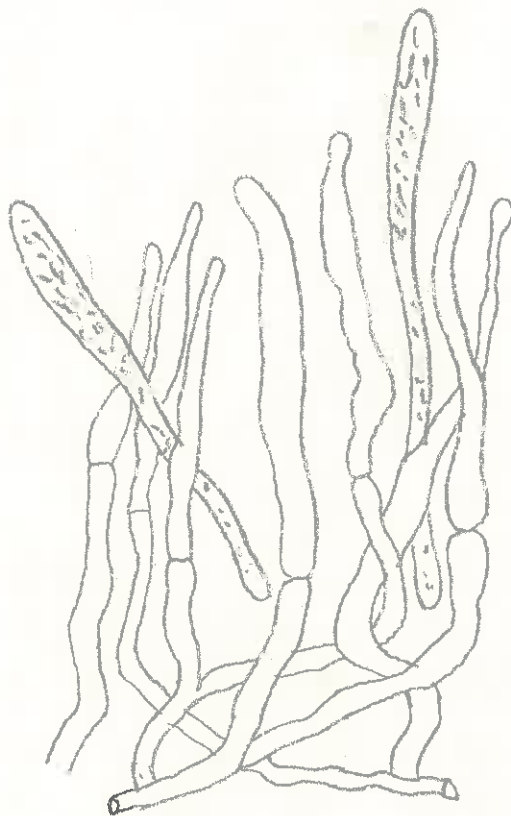
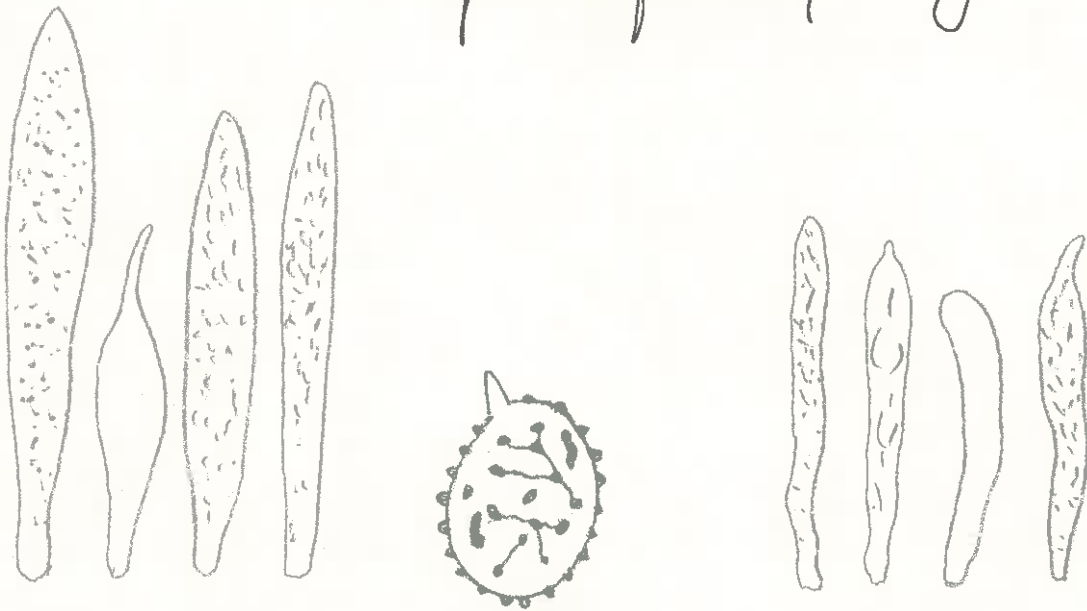
(more, next page)

Singer II, VII, VIII, pale yellow in mass. Pleurocystidia 48-76 x 7-10  $\mu$ , ventricose to sub-clavate, apices acute to occasionally appendiculate, banded, granular, or empty; cheilocystidia 38-50 x 5-7  $\mu$ , cylindric-clavate or ventricose, apices rounded, mucronate, or appendiculate, banded or empty. Epicutis a turf of erect <sup>septate-constructed, apices rounded or subcapitate,</sup> hyphae, with several clavate, banded pilocystidia 60-80 x 5-6  $\mu$ .

Habitat and Distribution. - On soil, in woods and in open places, North Carolina, August.

Discussion. - The color is variable: the red is almost entirely lacking when growing in open places, and the pileus is then almost "cinnamon buff." The red forms are separated from R. rubescens Beardslee by the slightly smaller spores, the much shorter warts, and the paler yellow spore-deposit.

*Fusula cinerascens* Beardslee  
(from Asheville, Aug. 1917. Coll.-Det by Beardslee  
Specimen from N.Y. Bot. Garden)



RUSSULA CLITOCYBIFORMIS Murrill

Torrey Bot. Club Bull. 67:231. 1940

Pileus 4.5 cm. broad, convex to deeply depressed, dirty-white, slightly viscid, finely tomentose, strongly deflexed on drying, margin even. Flesh very thin, white, unchanging; odor none, taste mild or nearly so. Lamellae adnate, white, unchanging, some forking at the base, narrow, rather close, inserted, entire, thin. Stipe 3 cm. x 8 mm., equal, smooth, glabrous, white, unchanging.

Spores 9-11  $\mu$ , globose, spinulose, white in mass.

Cystidia abundant, spinulose, sharp, smooth, hyaline, about 60-75 x 5-10  $\mu$ .

Habitat and Distribution. - On soil, under hardwood, Gainesville, Florida, October 21, 1938 (F 18366).

Discussion. - Dr. Erdman West was unable to find the type.

Moreover, Singer does not treat it in *Sydowia* II, nor in other papers I have seen.



RUSSULA COMPACTA Frost & Pk.

New York State Mus. Ann. Rept. 32:32. 1879

Pileus 6-15 cm. broad, convex, then expanded-convex, finally depressed, at times umbilicate or even infundibuliform, at first whitish, becoming "light ochraceous-salmon," "cinnamon-buff," "cinnamon" or "clay color," dry, glabrous, <sup>cuticle</sup>~~pelliole~~ separable on outer half, breaking up into tomentose patches (seen under lens), margin even. Flesh white, staining brown on exposure to the air, compact; odor strong, becoming more so on drying, taste mild. Lamellae adnate, close or crowded, narrow to medium broad, many to few or none short, white, reddish-brown to "cinnamon" where bruised or rubbed, occasionally forked behind or midway, edges eroded. Stipe 2-6 cm. x 8-25 mm., white, staining brownish when handled, subequal or tapering downward, dry, spongy-solid, finally hollow.

Spores 7-9.5 x 6-8.5  $\mu$ , ellipsoid to subglobose, at times globose, warts 0.3-0.6  $\mu$  high, fine lines forming an incomplete reticulum, warts at times fused, Singer type IIIb, VIII, Schaeffer 2a-114 and 4c-40, white in mass (Crawshay A). Pleuro-  
48-63 x 6-8  $\mu$ ,  
cystidia/fusoid to ventricose, mucronate to appendiculate, empty or at times granular above; cheilocystidia clavate, 34-50 x 4-8  $\mu$ , apices rounded, at times appendiculate, empty or granular. Gill-trama with a vesiculose mediostrate and a hyphal hymenopodium. Subhymenium of small cells. Epicutis of yellowish-brown repent septate hyphae, 3-6  $\mu$  broad. Clamps none.

(more, next page)

Habitat and Distribution. - On soil, in deciduous and coniferous woods, Tennessee, North Carolina, Florida, and doubtless throughout the Southeast, June-August.

Discussion. - Collection No. 12178 was white with a tint of pink; otherwise it agreed with R. compacta in other essential characters. When fresh, all parts turn yellow in 15% KOH. Smith says the lamellulae do not always alternate. When dried the lamellae are gray. Singer discusses how to distinguish it from R. polyphylla (= R. magnifica) in Mycol. 35:144. (over)

Notes on Type

leg. Chas. H. Peck, (Since Peck did not designate a Type, his collection from Sandlake, mentioned first in his original description, was studied. Notes below are based on the collection, marked "3" on the box.) Aug. 1

Spores 7-9.5 x 6-8  $\mu$ , short-ellipsoid to subglobose, reticulum incomplete, at times nearly absent, warts 0.1-0.4  $\mu$  high, ornamentation like Schaeffer 2a-14 and 4c-40, and Singer IIIb, VI, VII, VIII. Pleurocystidia 52-63 x 6-8  $\mu$ , ventricose to clavate, at times appendiculate, ventricose; cheilocystidia 30-45 x 5-10  $\mu$ , clavate, at times capitate. Gill-trama with a vesiculose mediate and a hyphal hymenopodium. Subhymenium of small cells. Epicutis of brownish, repent, septate hyphae. Clamps none.

Singer has published his studies of the Type in Mycologia 35:143-144. 1943.

BRITISH MUSE, LONDON  
BRITISH MUSE, LONDON  
BRITISH MUSE, LONDON

Compacta

polyphylla

- 1. Pileus ± fulvous, blunt  
margins
- 2. Lamellae drying gray

- 1. Buff, acute margins
- 2. brownish

Notes on type

BRITISH MUSE, LONDON  
BRITISH MUSE, LONDON  
BRITISH MUSE, LONDON

BRITISH MUSE, LONDON

BRITISH MUSE, LONDON

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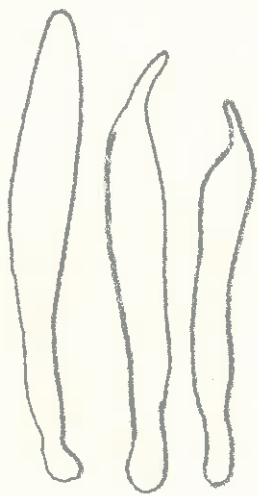
BRITISH MUSE, LONDON

BRITISH MUSE, LONDON

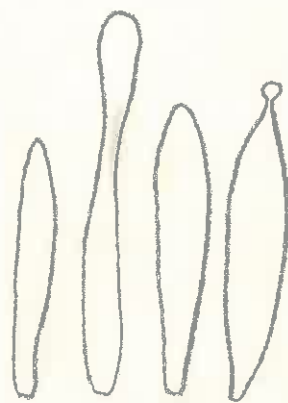
BRITISH MUSE, LONDON

BRITISH MUSE, LONDON

*Russula compacta* Foot + PK.  
Type (No. 3)



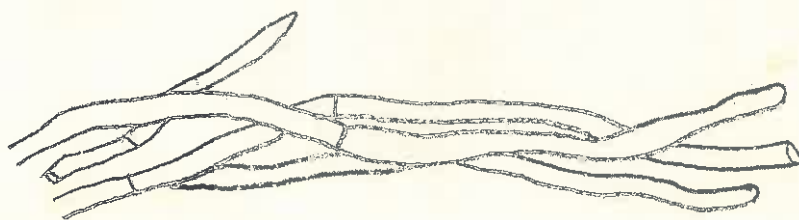
Pl. -  $\times 1000$



Ch -  $\times 1000$

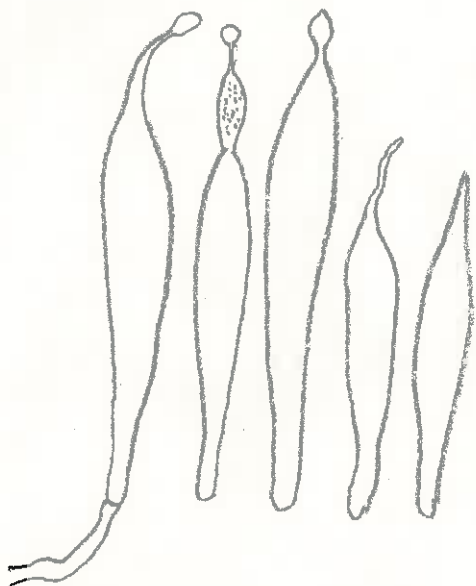


$\times 3000$



Cuticle,  $\times 1000$

*Russula compacta* Frost + PK  
No. 19685



Pl - X 1000

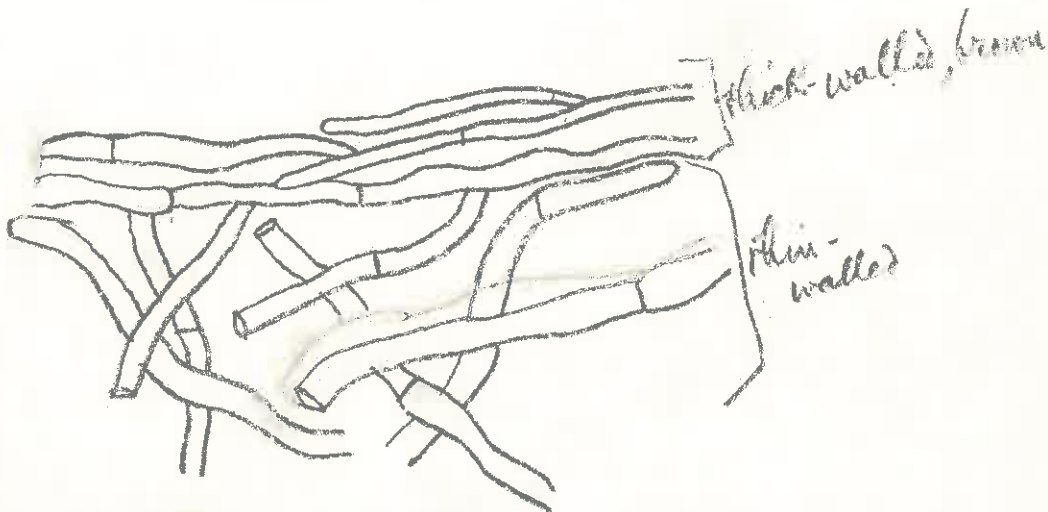


X 3000

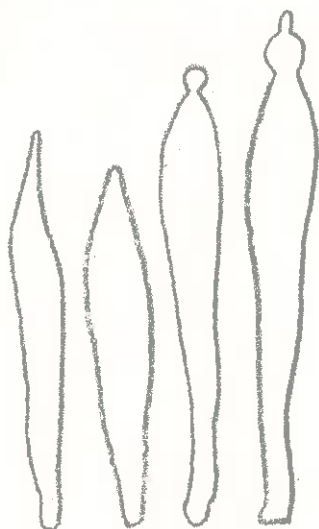


Ch - X 1000

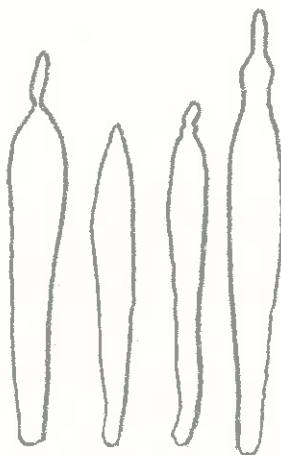
Epicentris - X 1000  
yellowish-brown  
appressed (repent)  
hyphae, 3-6  $\mu$  broad.



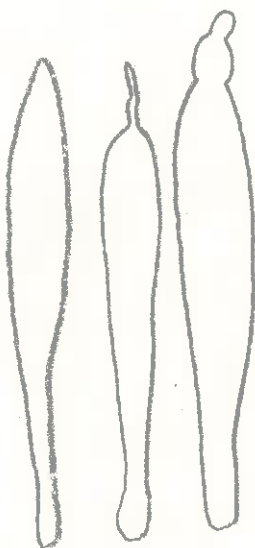
*Russula compacta* Frut + PK.



H - x 1000  
No. 9017



Ch - x 1000  
No. 9017



Pl - x 1000  
No. 19685



Ch - x 1000  
No. 19685



20910 - *Russula compacta* ~~Fr.~~ + Fr.

19685 - *Russula compacta* Frost & PK.



RUSSULA CONSOBRINA Fr.

~~Obs. Myc. 2:195. 1818~~

*Epicr. Myc., p. 359. 1838.*

Pileus 6-8 cm. broad, convex, expanding, depressed, central portion "Saccardo's umber" or olive-brown (not well matched), marginal one-fourth paler, "olive-ocher," viscid, cuticle separable part-way, appearing glabrous, surface strongly veined, margin even. Flesh white, grayish next to the cuticle; odor none, taste acrid. Lamellae narrowly adnate, white, then pale cream, medium broad, close, some short, few forked. Stipe 4-5 cm. x 14-18 mm., white, strongly greyish-netted, slightly red when rubbed, nearly equal or ventricose, stuffed or solid.

Spores 7.5-10 x 6-7.5  $\mu$ , ellipsoid, faintly punctate-rough (nearly smooth), warts less than 0.1  $\mu$  high, with indistinct fine lines forming an incomplete reticulum, Singer IIIb, VII, white in mass. Pleurocystidia 35-60 x 5-7  $\mu$ , fusoid, ventricose, or clavate, appendiculate, granular or minutely banded; cheilocystidia 37-50 x 5-7  $\mu$ , cylindric to ventricose, acute or appendiculate, empty or granular. Epicutis an interwoven zone, with scattered, clavate, rather inconspicuous, minutely banded pilocystidia, and numerous, slender, erect hyphae, some of which arise from a basal, enlarged cell.

Habitat and Distribution. - On soil, under pine, Highlands, North Carolina, July 26, 1934.

Discussion. - This was identified by <sup>Hester using</sup> N. A. Flora. It also seems to agree with Schaeffer's description, as well as Singer's (Mycologia 34:81-82).

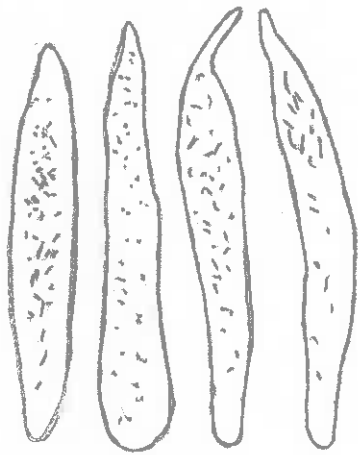
and Schaeffer's  
material from Copenhagen,

RUSSULA CONSOBRINA Fr.

Julius Schaeffer's Herbarium  
Coll: by Romell, No. 6916

Spores 7-8 (10) x 6-7 (8)  $\mu$ , ellipsoid, warts 0.1  $\mu$  high or less, some catenulate, a few fine lines. Pleurocystidia 52-60 x 5-9  $\mu$ , fusoid, clavate, or obclavate, acute or mucronate, granular or banded; cheilocystidia 32-55 x 6-7  $\mu$ , fusoid or clavate, acute or mucronate, empty or coarsely granular. Subhymenium cellular. Cuticle a gelatinous zone, more or less of the emetica-type, hyphae erect or semi-erect, somewhat cystidioid, pilocystidia present.

*Russula consobrina* Fr.  
Schaeffer's Herbarium



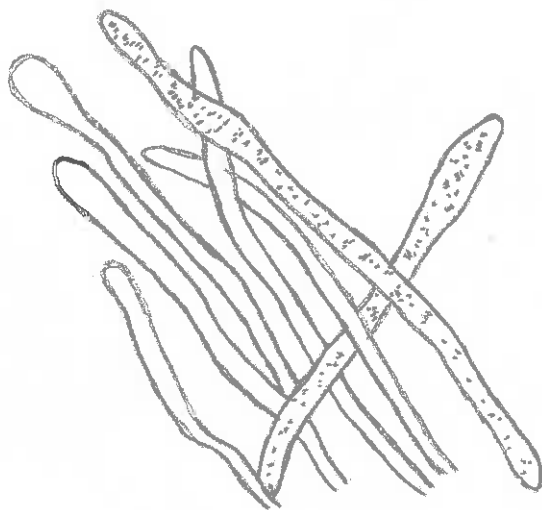
Sp. - x 1000



x 3000

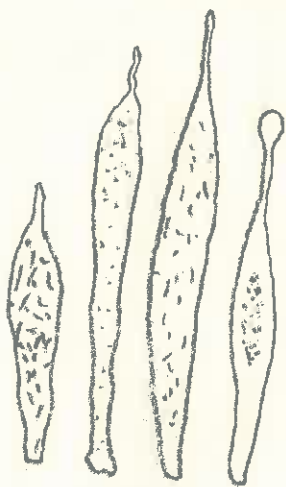


Ch. - x 1000



Cuticle - x 1000

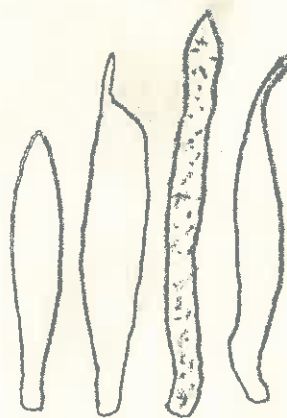
*Fuscula consobrina* Fr.  
No. 5193



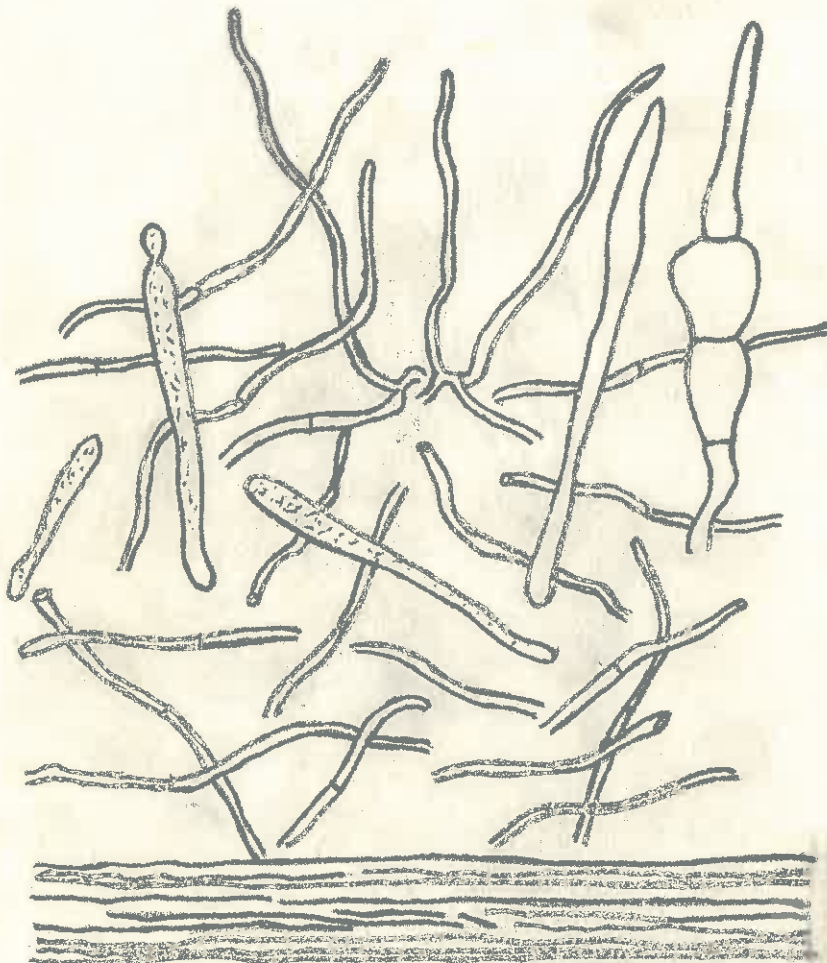
Pl - X 1000



X 3000



ch - X 1000



Epicutis X 1000

RUSSULA CORALLINA Burl.

N. A. Flora 9:213. 1915

Pileus 3-4.5 cm. broad, convex, then depressed with the margin arched, pale-rosey-pink, unevenly colored, viscid, soon dry and densely pruinose, the cuticle breaking up into granules, exposing the cream-white context beneath, margin even. Flesh mild becoming acrid. Lamellae slightly adnate, white, equal, rounded at the outer ends, narrow, close, forking. Stipe 2.5 cm. x 12 mm., white, tinged pink, tapering downward, becoming hollow.

Notes on Type

Spores 7.5-9 x 5.7-6.5  $\mu$ , ellipsoid, punctate-rough, warts usually less than 0.1  $\mu$  high, rarely 0.2  $\mu$ , with few to several fine lines forming a rather indistinct reticulum, Singer IV, VII, white. Pleurocystidia 46-68 x 6-10  $\mu$ , fusoid to ventricose, occasionally appendiculate, empty or banded; cheilocystidia 32-48 x 5-7  $\mu$ , ventricose, at times appendiculate, some banded. Epicutis a zone of interwoven hyphae, with numerous ones more or less erect, irregular to slightly nodulose, apices somewhat acute, no pilocystidia.

Habitat and Distribution. - On sandy soil, mixed woods, Vermont, 1910.

Discussion. - This has not been reported from the Southeast. Singer seems not to have reported studies of the type.

Type Data: Burlingham Collection, N.Y. Bot. Garden Herb. (62-1910) from Newfane, Vt., Aug. 10, 1910, marked Type.

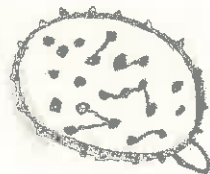
*Fussula corallina* Burl.  
Type



Pl - x 1000



Ch - x 1000



x 3000



Hyphae elements  
of *epicutis* - x 1000

Pileus 3-5 cm. broad, semi-globose then convex, becoming expanded and depressed, viscid, pellicle separable to disk, blackish when young (buttons), then "rhodonite pink," disk "dull Indian purple," "hellebore red," "dark corinthian purple," "buttons" entirely "dull Indian purple," to "mars violet" or "anthracine purple," disk remaining blackish, velutinous, margin faintly striate. Flesh firm, white, "pale rhodonite pink" next to the cuticle; odor mild; taste unpleasant, slightly acrid-bitterish to acrid. Lamellae adnate to adnexed, white and remaining so, close, medium broad, some forked at base, few short, edges eroded to crenate. Stipe 4-6 cm. x 5-10 mm., equal or more often tapering upward, apex white, elsewhere concolorous or paler than the pileus, velutinous, stuffed.

Spores 7-8 (9) x 6-7.5  $\mu$ , short-ellipsoid, warts 0.2-0.3  $\mu$  high, warts isolated or with few fine lines, Singer IV, VI, Schaeffer 3c-28, white in mass. Pleurocystidia 43-58 x 5-11  $\mu$ , clavate to subcylindric, empty; cheilocystidia 37-48 x 3-5 (7)  $\mu$ , irregularly cylindric or subclavate, empty. Epicutis of more or less erect, septate or non-septate hyphae which are 2-3  $\mu$  broad, the apices acute or rounded, at times capitate, at times branched.

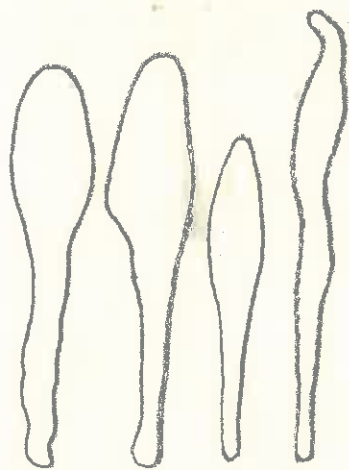
Habitat and Distribution. - On humus, under rhododendron, Alum Cave Parking Area, August 8, 1943.

Discussion. - Appears close to R. corallina Burl. Singer says it is near both corallina and peckii Singer. A comparison shows it cannot be peckii. That species (the type) is brighter red, has different spores (more or less reticulate with fine lines), different cystidia, and different epicutis-elements.

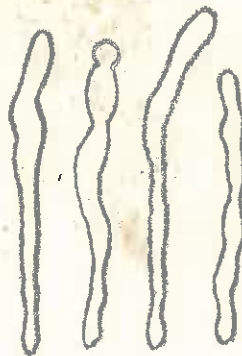
See also No. 17104.



Russula No. 15784  
 corallina Burl.



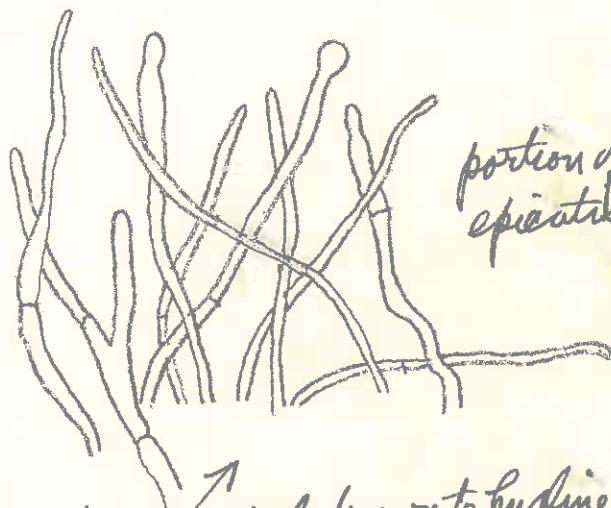
Pl - x 1000



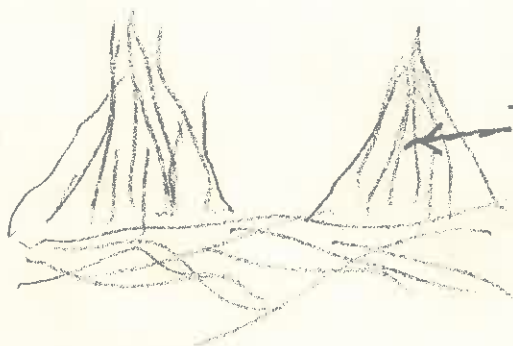
ch - x 1000



x 3000



portion of  
 epiautis -  
 x 1000



tufts of pale brown to hyaline  
 hyphae, — the  
 "velvet" observed  
 on the surface.

17104

RUSSULA CORALLINA Burl.

(Same as No. 15784)

Pileus blackish at first, "hellebore red", "dark corinthian purple", young caps "mars violet" to "anthracine purple", disk remaining blackish, viscid, pellicle separable to disk. Context "pale rhodonite pink" under pellicle; taste acrid.

Stipe paler than pileus, "pale rhodonite pink."

Spores 7-8 x 5.5-7  $\mu$ , short-ellipsoid, warts 0.2-0.4  $\mu$  high, isolated or with a few indistinct fine lines. Pleurocystidia 35-43 x 7-10  $\mu$ , not conspicuous, cylindric to spathulate or subclavate, empty; cheilocystidia cylindric, inconspicuous, 30-42 x 3-5  $\mu$ , empty. Epicutis a turf of more or less erect or semi-erect, septate or non-septate hyphae, arising from a thin, inconspicuous hypodermium.

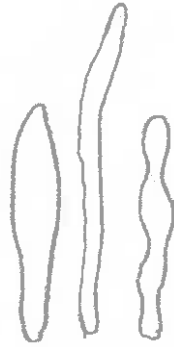
*Russula* No. ~~17104~~ *Corallina* Burl.  
(same as 15984)



Pl x 1000



x 3000



Ch - x 1000



RUSSULA CORINTHIIRUBRA Burl.

N. A. Flora 9:220. 1915

Pileus up to 9 cm. broad, becoming plane or depressed, Corinthian-red, fading, center becoming maize-yellow, viscid, pellicle separable half-way, glabrous, margin finally striate-tuberculate. Context white, tinged red next to cuticle; odor not distinctive, taste slowly acrid.

Lamellae narrow behind, ventricose, in front, becoming yellow, equal, some forked behind, venose, close.

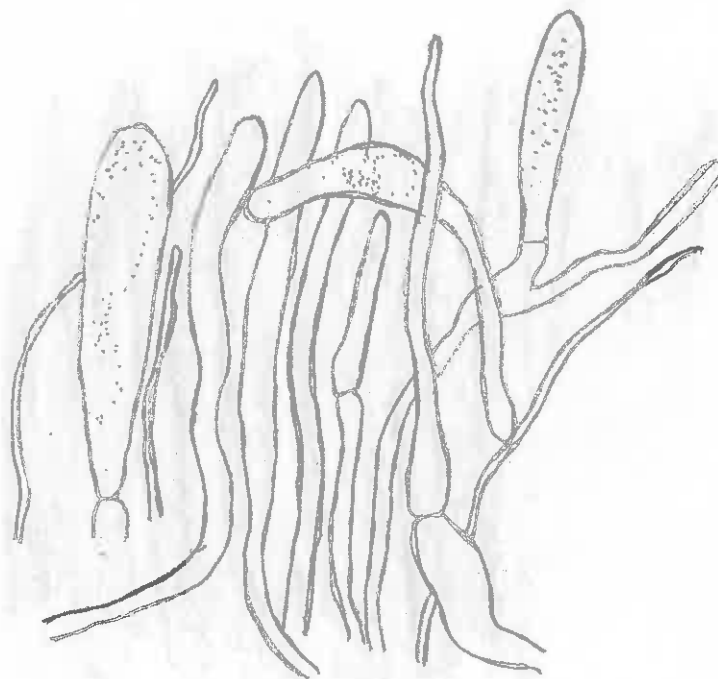
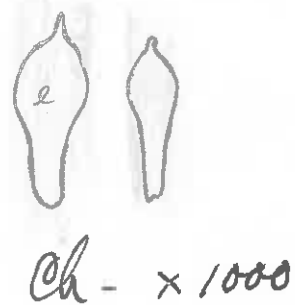
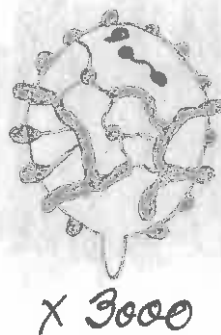
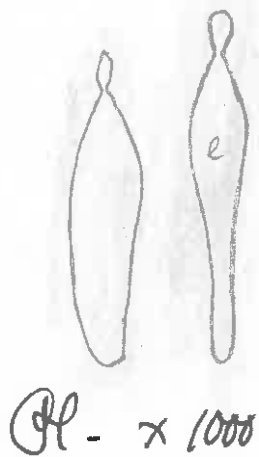
Stipe 4 cm. x 17 mm., white, firm, nearly equal.

Spores 8-10 x 7-8  $\mu$ , ellipsoid, warts 0.4-0.8  $\mu$  high, connected by bands and a few lines forming a reticulum, in mass: ochraceous (E?). Pleurocystidia few, 36-47 x 8-10  $\mu$ , clavate, mucronate, empty; cheilocystidia few, 22-25 x 6-10  $\mu$ , subclavate to inverted-flask shaped, mucronate, empty. Subhymenium a narrow zone of small cells. Cuticle an ixotrichodermium, hyphae repent, erect, or semi-erect, with scattered, inconspicuous pilocystidia. Hypodermium absent or quite inconspicuous.

Habit, habitat and distribution. - Under deciduous trees (oak, pignut, and chestnut), New York, Aug.

Observations. - The microscopic characters given above are based on a study of the type. The type was collected at Cold Spring Harbor, Long Island, New York, Aug. 2, 1912.

*Russula corinthiubra* Burl.  
Type



RUSSULA CRASSOTUNICATA Singer

Bull. Soc. Myc. Fr. 54:132. 1938

Pileus 4-8 cm. broad, convex, soon narrowly depressed, expanding, white ~~to brownish yellowish~~, <sup>innately,</sup> fine, brown punctate-scurfy, dry, or viscid and drying rapidly, cuticle leathery, separable over half-way. Context white, inclined to stain brownish, firm; odor of trimethylamine, taste bitter and slightly burning.

Lamellae white, more or less stained brown on bruising, subdistant, narrowed both ends, medium broad, subintermixed to almost alternating.

Stipe 3-3.3 cm. x 9-11.5 mm., white, becoming brown spotted, finely rough-subfurfuraceous horizontally, not rugulose, subequal, hollow.

Spores 9-11.5 x 7.5-9.7  $\mu$ , ellipsoid, warts more or less 0.8  $\mu$  high, orn. VI, rarely IV, <sup>in mass: white (A).</sup> Cystidia 70-120 x 10-10.8  $\mu$ , fusoid-acute. *Article of hyphae + some pseudocystidia + also dermatopseudocystidia*

Habitat. - On soil, under Tsuga in mixed woods, Michigan, and Pacific Coast, July-August, or later.

Observations. - Close to R. compacta, which differs in habit and size, in smooth stipe, taste, close lamellae, less thick and touch, and more common in East and South. Also near granulata, differing in its spores.

Sydowia 11:157.

RUSSULA CRATAEGORUM Murrill

Florida Acad. Sci. Jour. 8:181. 1945

Pileus 9 cm. broad, convex to subexpanded, incarnate and dark-cream, dry, cuticle adnate, glabrous, margin even. Flesh 5 mm. thick, white, unchanging, odor and taste mild. Lamellae inserted, adnate, cremeous with age, 8 mm. broad, medium distant, /edges slightly fimbriate. Stipe 5 cm. x 20 mm., white with a rosy blush, equal, smooth, glabrous.

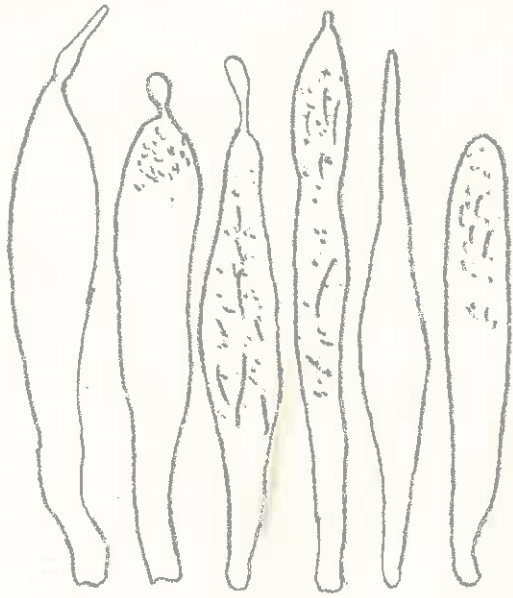
Notes on Type (712185, Type near Gainesville, Fla., Oct 1 - 1944, coll. W.A. Murrill)

Spores 8.5-10 x 7-8.5  $\mu$ , ellipsoid, warts 0.6-1.0  $\mu$  high, isolated, a few catenulate, a few to several fine lines, Singer IV, VI, VIII, pale yellow in mass. Pleurocystidia 58-78 x 7-12  $\mu$ , ventricose, clavate, at times constricted, apices rounded or more often short-appendiculate, empty, granular, or banded; cheilocystidia 41-53 x 7-12  $\mu$ , ventricose, clavate, or subfusoid, apices rounded or mucronate, empty. Epicutis a turf, or more or less tufts of hyphae which are slender, somewhat constricted, accompanied by scattered, much broader, septate hyphae often composed of swollen cells.

Habitat and Distribution. - On soil, mixed woods, under hawthorn, Florida, October 1, 1944.

Cf. R. borealis Kauff.

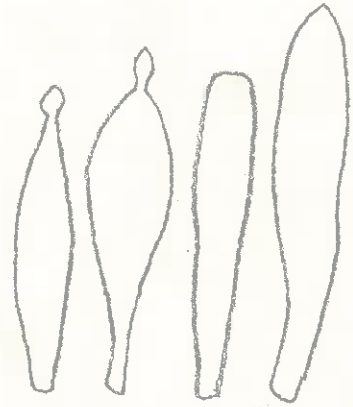
*Russula crataegorum* Muirill  
Type



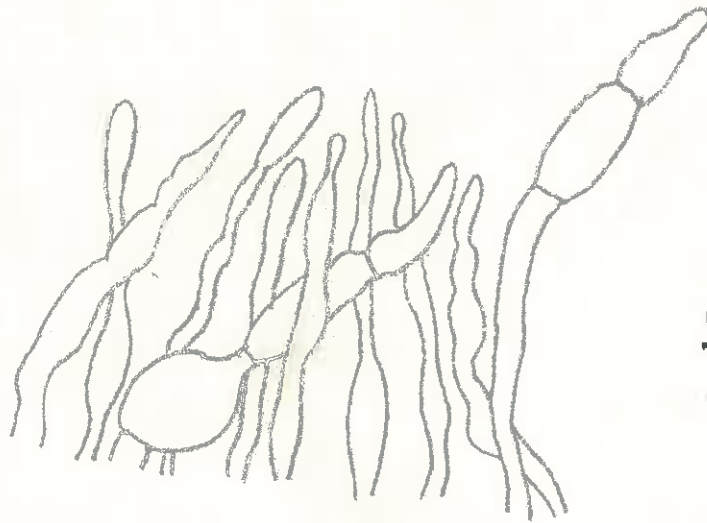
Sp. - x 1000



x 3000



Ch. - x 1000



Epicutis x 1000



RUSSULA CREMEA (Murr.) Singer

Lilloa 22:711. 1949

Russula heterospora var. cremea Murr. Torrey Bot. Club  
Bull. 67:57. 1940.

Pileus 3-7 cm. broad, convex-umbilicate, then depressed, white, opaque, tending to show broad rusty-ocher spots when dried, with smooth rounded-obtuse margin, glabrous or subglabrous, on the margin, slightly viscid, cuticle scarcely to easily separable, margin even. Flesh white, unchanging; odor none, taste mild or occasionally slightly astringent. Lamellae sinuate or attingent and becoming subdecurrent, white, becoming creameous, moderately broad, or broad (3-5 mm. in the smaller specimens), subdistant to almost crowded, equal, simple or some forked. Stipe 2.4-4 cm. x 10-17 mm., white, sometimes somewhat honey yellow at base, glabrous, smooth, equal or tapering downward.

Notes on Type

(F 18343; High hammock, Sugarfoot, September 29, 1938)

Spores 8.5-11 x 5.4-6.3  $\mu$ , ellipsoid, warts 0.1  $\mu$  or less in height, rarely 0.2  $\mu$  high, with fine lines forming more or less a complete reticulum, Singer IIIa, IIIb, IV, at times VII, in mass: C (Crawshay). Pleurocystidia 50-60 x 7-8  $\mu$ , clavate, apices acute or mucronate or capitate, banded; cheilocystidia 37-55 x 5-7  $\mu$ , clavate, apices rounded, acute, or capitate, granular or banded. Epicutis of tangle of slender,

(more, next page)

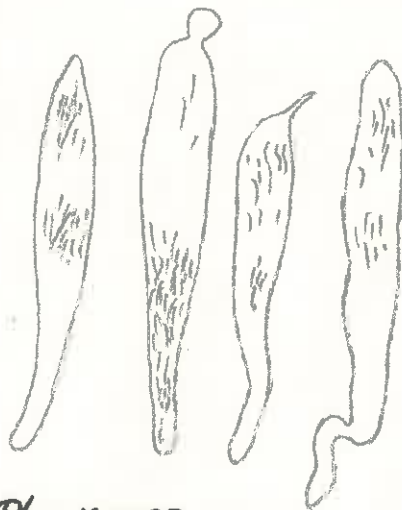
more or less nodulose hyphae which often taper at the free end, and extending vertically or tangentially; no pilocystidia.

Habitat and Distribution. - On soil, under turkey oak, Florida, July-September.

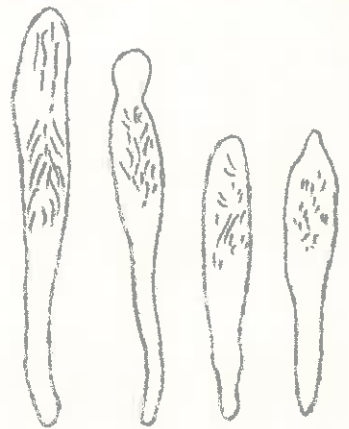
Discussion. - Singer (Sydowia 11:201) says R. cremea is similar to R. westii, differing only in spore characters.

Russula cremea (Murr.) Singer

Type



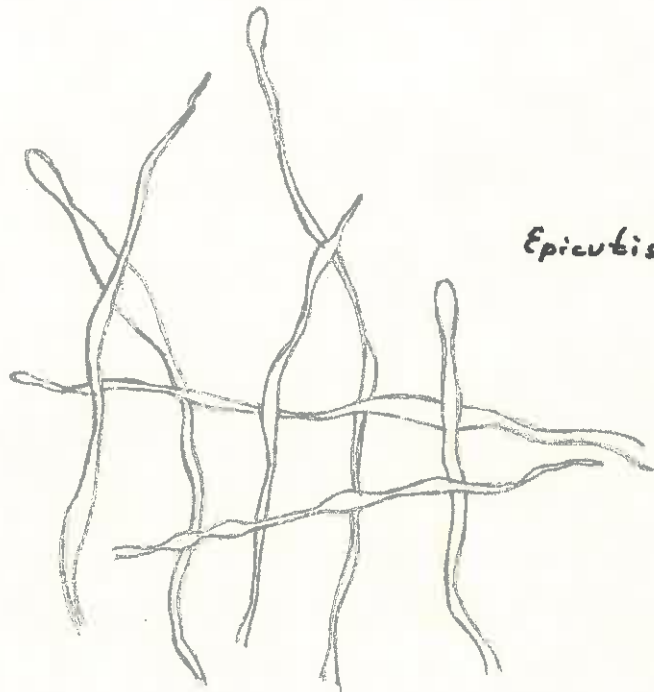
Pl. - x1000



Ch. - x1000



x 3000



Epicutis - x1000

RUSSULA CREMEICEPS Murrill

Notes on Part of Type (U-T No. 21230)

(Collected by Murrill, under laurel oak, Gainesville,  
June 28, 1944.)

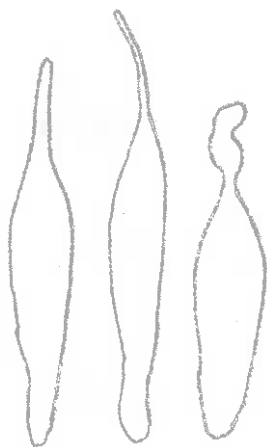
Spores 7-9 x 6.3-8  $\mu$ , ellipsoid, warts 0.4-0.8  $\mu$  high,  
isolated, or with a few short, fine lines, some short-catenulate.  
Pleurocystidia 45-55 x 7-10  $\mu$ , clavate to fusoid, appendiculate,  
empty; cheilocystidia 35-50 x 4-8  $\mu$ , clavate, fusoid, at times  
slightly constricted, apices rounded to appendiculate, empty.  
Epicutis of slender hyphae, the terminal elements of which are  
subulate, or a few blunt or subcapitate, at times nodulose-  
constricted; <sup>or fusoid;</sup> no pilocystidia.

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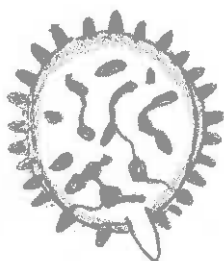
Did Murrill ever publish it? I have not found it in  
the literature. It resembles R. subcremeiceps Murr., but it  
has different spore-ornamentation, and has no pilocystidia  
(which are present in R. subcremeiceps). R. cremea (Murr.)  
Singer is apparently different in its spore-warts and epicutis.

*Rusula cremericeps* Murr.

Part of Type (U.T. - No. 21230)



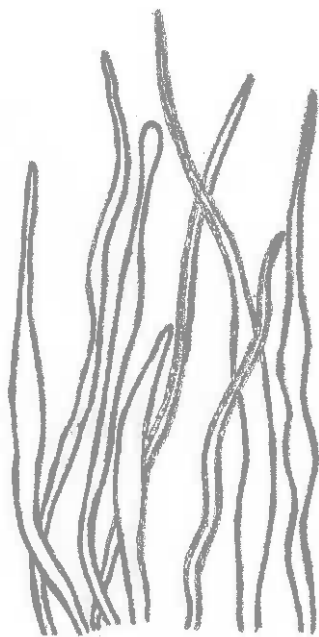
Sp. - x 1000



Sp. x 3000



Ch. - x 1000



Epicutis x 1000

RUSSULA CREMEIROSEA Murrill

Lloydia 8:265. 1945

Pileus 7 cm. broad, convex to slightly depressed, rose and cream, smooth, glabrous, margin even, incurved on drying. Flesh thin, white, unchanging, odor and taste mild. Lamellae adnate, yellow at maturity, mostly equal, some forked, rather narrow, subcrowded. Stipe 5 cm. x 17 mm., white with a faint pink blush, somewhat discolored on drying, equal, smooth, glabrous.

Notes on Type (79326, Type. Newnan's Lake near Gainesville, Fla. July 9, 1938. Coll. & det. N.A. Murrill)

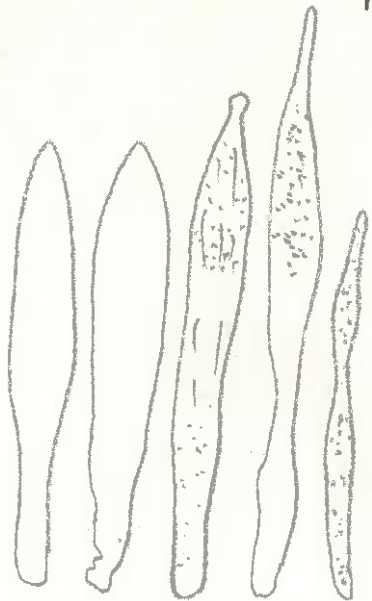
Spores 8-11 x 7.5-10  $\mu$ , ellipsoid, warts 0.8-1.4  $\mu$  high, isolated or with a few indistinct fine lines, Singer VI, IV, in mass: stramineous. <sup>(c?)</sup> Pleurocystidia 50-76 x 3-10  $\mu$ , ventricose, to cylindric-constricted, apices acute or appendiculate, empty, granular, or banded; cheilocystidia 42-48 x 7-9  $\mu$ , ventricose or obclavate, apices mucronate to rounded-blunt, empty. Epicutis of more or less erect hyphae which are cylindric to constricted, apices acute or rounded, rarely septate; no pilocystidia.

Habitat and Distribution. - On soil, under oak, Florida, July 9, 1938.

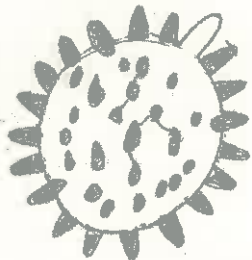
Discussion. - Murrill says it is near R. xerampelina, and that there are no cheilocystidia. I found cheilocystidia (see above).

*Russula cremiurosea* Murrill.

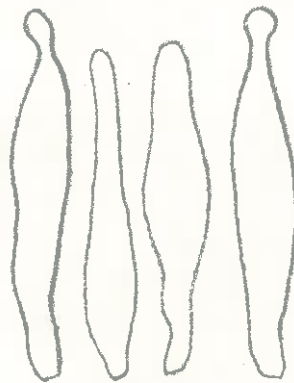
Type



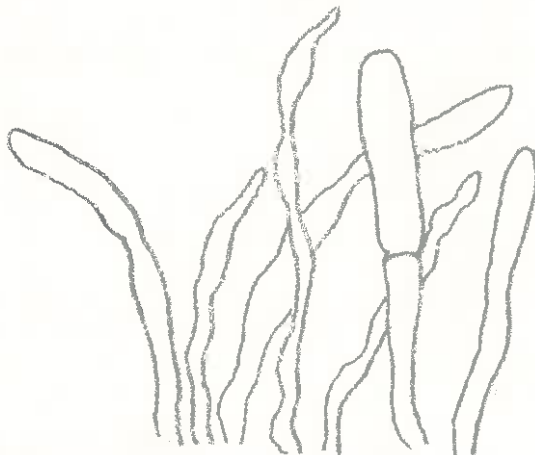
PL -  $\times 1000$



$\times 3000$



Ch -  $\times 1000$



Epicutis  
 $\times 1000$

RUSSULA CREMEIRUBRA Murrill

Lloydia 8:265. 1945

Pileus 7 cm. broad, depressed, pale-cream suffused with pale-red, smooth, glabrous, margin pectinate-striate. Flesh thin, white, unchanging; odor and taste mild. Lamellae adnate, straw-colored, few inserted, broad, ventricose, rather distant, entire. Stipe 5 cm. x 35 mm., white, unchanging, equal, smooth, glabrous, solid.

Notes on Type (f 12100. Arredonda near Gainesville, 8-72-43. Call + det NA Murrill)

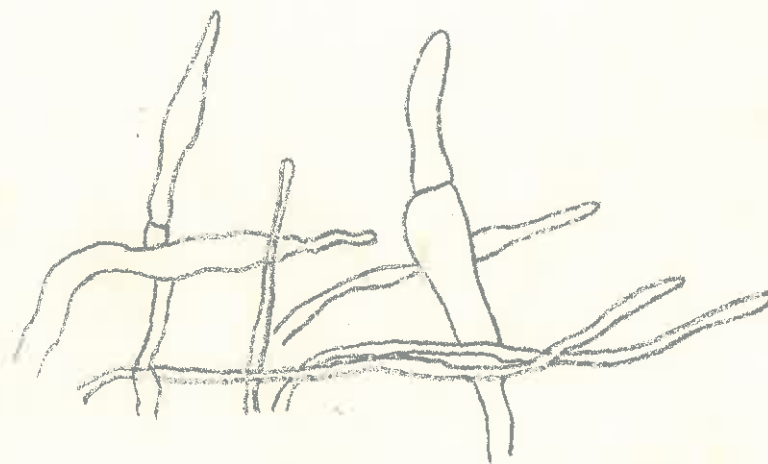
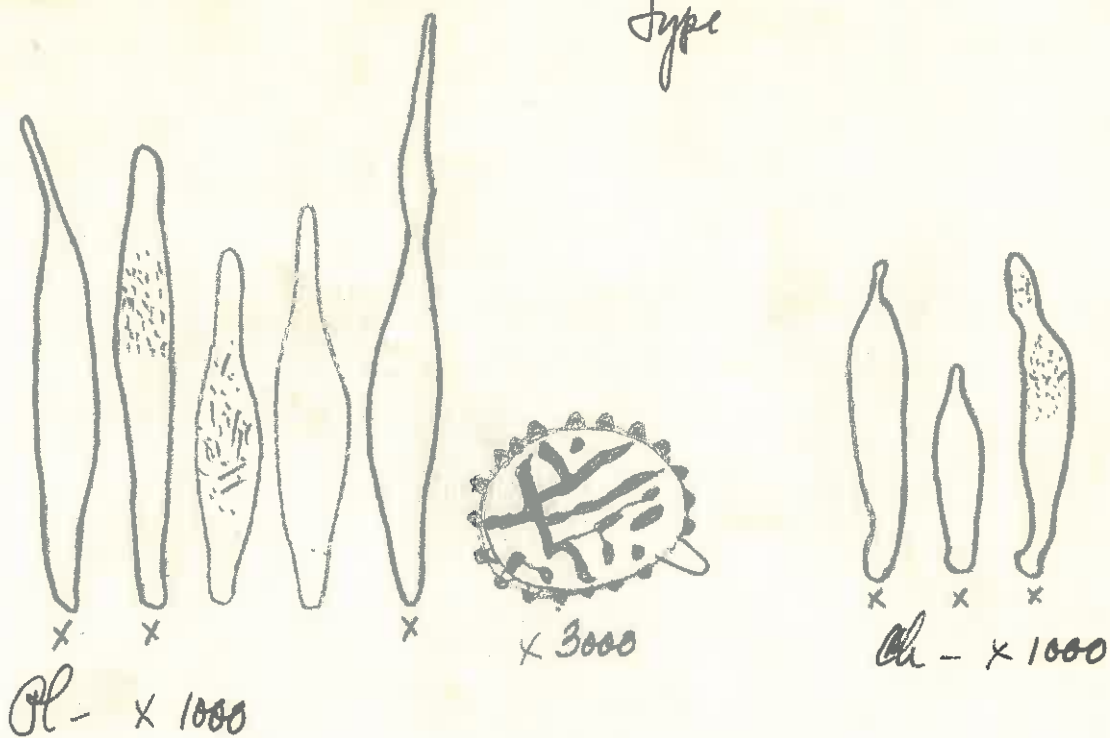
Spores 8-9.5 x 7-8  $\mu$ , ellipsoid, warts 0.4-0.6  $\mu$  high, catenulate, few isolated, an occasional fine line, Singer II, VIII, pale yellow in mass. Pleurocystidia 42-76 x 7-10  $\mu$ , ventricose to fusoid, often long-appendiculate, empty, granular, or banded; cheilocystidia 27-43 x 5-7  $\mu$ , ventricose, mucronate or appendiculate, empty or granular. Epicutis of narrow (1-3  $\mu$ ), scattered, ascendant to erect hyphae, a few broader and septate; no pilocystidia.

Habitat and Distribution. - On soil, in turkey-oak woods, Florida, August 22, 1943.



*Fusula crenicirabra* Murr.

Type



*Epicutis*  
x 1000

RUSSULA CREMORICOLOR Earle

N. Y. Bot. Gard. Bull. 2:340. 1902

Fileus 6-10 cm. broad, convex, depressed, deep-cream colored, disk darker, viscid, margin even. Context white, unchanging; odor almost none, taste acrid.

Lamellae pale-cream colored, unequal, subcrowded, subsinuous, rather plane.

Stipe 4-6 cm. x 25-35 mm., white, irregular, subequal, smooth.

Spores (6.5) 8-9 x (5.5) 7-8  $\mu$ , ellipsoid to subglobose, warts 0.1-0.3  $\mu$  high, isolated or with a few fine lines, at times catenulate, in mass: white. Pleurocystidia 50-127 x 9-13  $\mu$ , more or less clavate or subcylindric, acute, obtuse, or capitate, granular or banded, many arising in the gill-trama; cheilocystidia 43-52 x 5-9  $\mu$ , clavate, more or less acute or mucronate, banded. Subhymenium a narrow zone of flattened cells. Cuticle a zone of gelatinous, more or less periclinally-arranged hyphae, the surface hyphae more or less erect, with pilocystidia; hypodermium not distinct.

Habit, habitat, and distribution. - In woods, California.

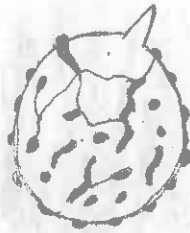
Observations. - The type is from Santa Clara County, California Dec. 4, 1901, coll. C. F. Baker, determined by Earle. The description of microscopic characters is based on a study of the type (N. Y. Bot. Garden, Serial No. 4441).

Singer (Agar., p. 708) places it in his Subsection Cyanoxanthinae, along with Cyanoxantha, heterospora and albiduliformis, and characterizes the spore-print as A or B.

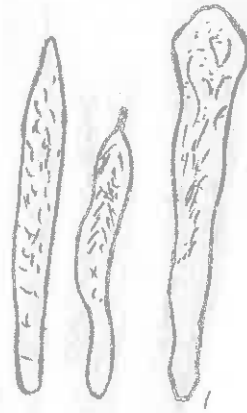
*Russula cremoricolor* Earle  
Type



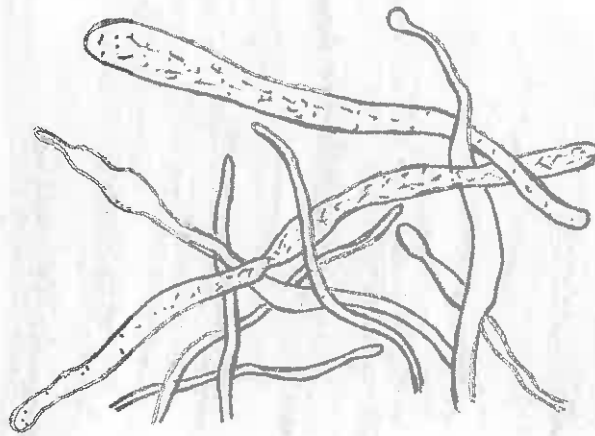
Ph - x 1000



x 3600



Ch - x 1000



Cuticle x 1000

RUSSULA CRENULATA Burl.

Mycologia 5:310. 1913

Pileus up to 9 cm., convex, plane to depressed, white or slightly yellow, viscid, pellicle separable, margin thin, slightly tuberculate striate in age. Context white, fragile; taste very acrid.

Lamellae adnate, white, rounded in front, not forking, close, edges notched or crenate.

Stipe 10 cm. x 20 mm., white, equal or enlarged below.

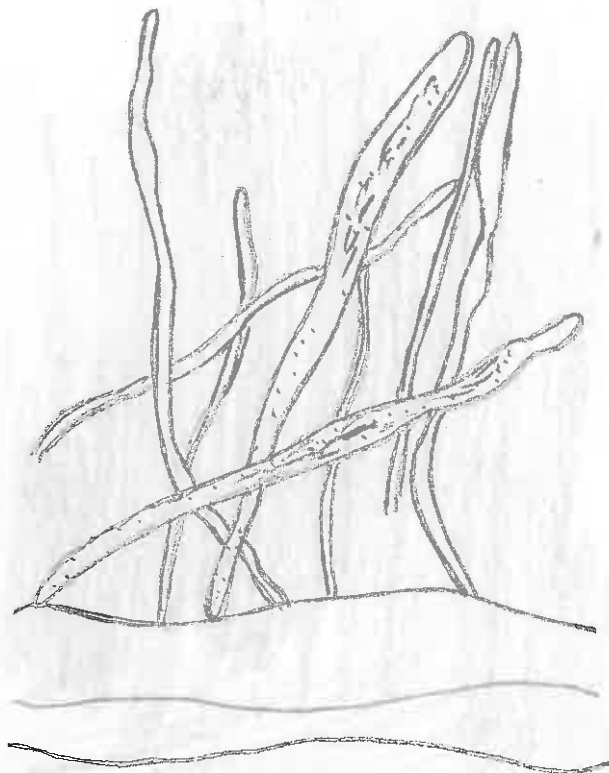
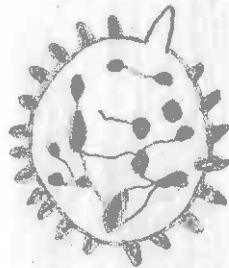
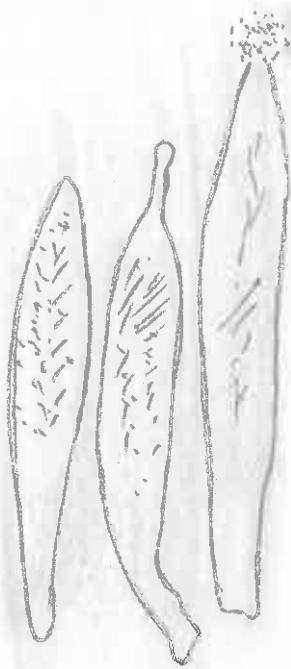
Spores 9-11 x 7-9.5  $\mu$ , ellipsoid to subglobose, warts 0.6-1.2  $\mu$  high, with some or many fine lines and some catenulate warts, forming a more or less complete reticulum; in mass: white. Pleurocystidia 61-76 x 10-12  $\mu$ , fusoid, acute or appendiculate, at times with an apical exudate, banded; cheilocystidia fusoid, 40-54 x 7-8  $\mu$ , banded, acute. Subhymenium of small cells. Cuticle of the emetica-type.

Habit, habitat, and distribution. - In fir forest with a few oaks, Oregon, Nov.

Observations. - The spores given as globose, 10  $\mu$ , white. The description of microscopic characters above is based on a study of the type, which is from Oregon.

Differs from albidula by crenate gills, larger size, broader adnate gills, slightly striate-tuberculate margin. Singer (Sydowia 11:236) says this seems to be consubspecific with R. emetica ssp. emeticella, although it may be ssp. lacustris.

*Russula crenulata* Burl.  
Type.



RUSSULA CRISTULISPORA Singer

Not. Cryptog. Sect. Crypt. fasc. 10-12:7. 1938

Pileus 3-5 cm. broad, convex, partly depressed, flattened, varying from deep purplish lilac to dull purple on margin, center always deep brown red to black, glabrous, viscid, finally more or less sulcate. Context white; odor none, taste slightly acrid to submild.

Lamellae attenuate-subfree, pale cream then cream ocher, narrow, close or crowded, mostly equal and simple, at times anastomosed.

Stipe 2-4.5 cm. x 8 mm., white, becoming slightly ochraceous brownish in cortex when touched or dried, stuffed, equal or attenuate upward.

Spores 6-9 x 5.5-8  $\mu$ , some 11 x 10.3  $\mu$ , subglobose or ellipsoid, orn. 0.2-0.8  $\mu$ , II (II-IIIa, II-IIIb, II-IV), few without cristulation and then IIIa, IIIb, in mass: neither white nor deep ochraceous. Macrocytidia fusoid, 40-68 x 6.5-10  $\mu$ , projecting none or moderately, some appendiculate. Epicutis with numerous dermatopseudocystidia which are entire or septate with constricted septa.

Near birch, summer and fall, Europe, Caucasus, New England (N. H.), New York, Michigan.

Close to blackfordae, from which it differs in ornamentation of spores, and cristulation.

RUSSULA CRUSTOSA Pk.

New York State Mus. Ann. Rept. 39:41. 1887

Pileus 7-13 cm. broad, hemispheric-convex, expanding, finally plane or centrally depressed, viscid, <sup>adnate,</sup> at first pale vinaceous or brownish vinaceous, at times becoming "drab" or "hair-brown," disk often buff, surface becoming "light grape green" areolate, often with pale stramineous areas, margin often becoming paler, in No. 21998, the pileus white, disk "olive buff," margin coarsely striate. Flesh white, unchanging, moderately firm; odor and taste mild or <sup>slightly acrid + at same time often slightly bitter in young lamellae</sup> (Burlingham says it may be slightly acrid). Lamellae adnate, narrowed behind, medium broad, broadest in front, white, finally buff or pale flesh buff, rather close, some forked behind, none short, edges even. Stipe 4-11 cm. x 18-30 mm., white, unchanging, rivulose, equal or ventricose or tapering below, solid.

Spores 6-8 x 5.7-7  $\mu$ , short ellipsoid or subglobose, warts 0.2-0.4  $\mu$  high, a few short lines or ridges (catenulate warts), or warts isolated, Singer IIIb, IV, VI, and VIII. In mass: ~~white with a pale creamy tint,~~ <sup>(or 19)</sup> Crawshaw B. Pleurocystidia 42-70 x 5-11  $\mu$ , fusoid to subclavate, empty or some with banded contents; cheilocystidia few, fusiform, apex slender or appendiculate, 42-52 x 4-7  $\mu$ . Gill-trama vesiculose. Subhymenium of small cells. Epicutis: (a) an outer pseudo-parenchyma zone bearing ~~pilocystidia~~ <sup>of hyphae,</sup> (a turf), 10-50 x 2-4  $\mu$ , often enlarged and septate below; (b) a broad more or less gelatinous zone of narrow (2-3.5  $\mu$ ) hyphae; (c) a repent, opaque zone.

(more, next page)

Habitat and Distribution. - On soil, in deciduous and mixed woods, Tennessee, North Carolina, Alabama, and Florida, June-September.

Discussion. - This agrees with the type in essential details. See: Singer, Mycologia 35:145 and Sydowia 11:197.



RUSSULA CRUSTOSA Pk.

Aug.)

(Specimen-box marked Type. Notes on Type Way, Saratoga Co., coll. Charles H. Peck,  
Spores 7-8 x 5.7-6.5 (7.5)  $\mu$ , ellipsoid to subglobose,  
warts 0.2-0.3  $\mu$  high, at times shorter, with a few short lines  
or ridges (catenulate warts) or with entirely isolated warts  
and no lines or ridges, Singer IIIb, IV, VI, and VIII, Schaeffer  
8b-12, 4c-40, 1b-68. Pleurocystidia 63-86 x 8-12  $\mu$ , fusoid or  
clavate, with or without banded contents, apex rounded or  
mucronate or appendiculate; cheilocystidia 32-48 x 6-8  $\mu$ ,  
fusoid or clavate, ~~with~~ at times mucronate or capitate, absent  
in some sections. Gill-trama vesiculose. Subhymenium of small  
cells. Epicutis: (a) with an outer, pseudoparenchymatous zone  
of irregular to rounded cells, bearing scattered to dense *hyphae*  
~~pleurocystidia~~ (turf), 12-60 x 1.5-4  $\mu$ , often enlarged downward.  
This layer may slough off in age or in sectioning. It remains  
in tact in sectioning young pilei. (b) a broad (150-250  $\mu$ ) zone  
of narrow hyphae (1-2  $\mu$  broad), which are more or less gelatinous;  
(c) a narrow, repent dense zone (20-30  $\mu$  broad).

Discussion. - Russula crustosa and R. virescens, according  
to Singer (Sydowia 11:198), seem to be parallel in many respects,  
but differ in the constantly mild taste and absence of purple  
or violet in the pileus, and perhaps more numerous pleurocystidia  
(in crustosa). See Singer: Mycologia 35:145, and Sydowia 11:197.

Russula *ovulifera* PK.

Type



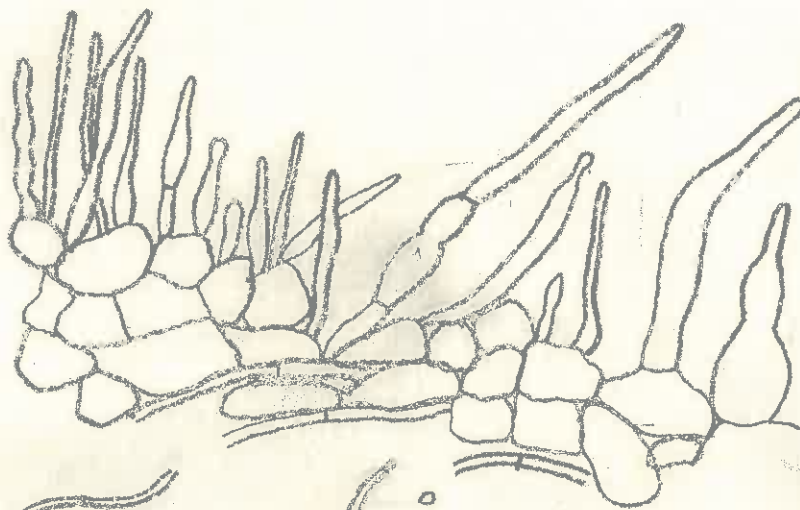
Pl. - x 1000



Ch. - x 1000

Turf of  
*filicoides*

Pseudo-  
paracalypta



± gelatinous  
zone



This one

x 3000



*Epicutis*

x 1000

2671 - *Russula crustosa* Pe.

24703

RUSSULA CRUSTOSA Pk.

under oak

Toxaway Gorge, June 15-62

Pileus 5-10 cm. broad, convex, finally plane and depressed, sub-viscid when young, near "chamois", at times with greenish tints, cuticle breaking to form numerous areolae (virescens-like), margin striate. Context white, fragile; odor and taste mild.

Lamellae adnexed, white then cream, close, rather broad, brittle, many joined behind, none short.

Stipe 3-7 cm. x 12-20 mm., white, unchanging, rivulose, glabrous, equal, solid.

Spores 5.5-7 x 4.8-5.5  $\mu$ , warts 0.1-0.2  $\mu$  high, isolated or catenulate, at times some obscure lines, IV, in deposits: C (-D). Pleurocystidia 66-78 x 9-11  $\mu$ , subclavate, usually more or less appendiculate or capitate; cheilocystidia 33-40 x 5-6  $\mu$ , subcylindric or tapering upward, often appendiculate. Cuticle of the virescens-type. Pilocystidia none.

Singer (Sydowia 11:197) says the spore-color varies between A-B and D, the northern form paler than in Florida collections.



24703 - *Russula crustosa* PK.

(Schw.) Fr.  
RUSSULA CYANOXANTHA (~~Schaeff. ex Secr.~~) var. CYANOXANTHA

Monogr. Hymen. Suec. 2:194. 1863

Russula aeruginascens Pk. N. Y. State Mus. Ann. Rept. 53:843.

<sup>1901.</sup>  
? Russula furcata (Fr.) Fr., Epicr. Myc., p. 352. 1838.

Fileus up to 15 cm. broad, convex, finally expanding-wavy and slightly depressed, viscid, "lavender" to "pale vinaceous-lilac," glabrous (but surface rivulose on margin at maturity), even or faintly striate, pellicle separable to disk. Flesh white, brittle; odor and taste mild. Lamellae adnate with a short, decurrent tooth, white, unchanging, mostly equal, few short, occasionally forked at base, medium broad, close. Stipe 6 cm. x 2.0-2.5 cm., white, unchanging, rivulose, solid, equal.

Notes on Type of R. aeruginascens Pk. (drawings under R. aeruginascens)

(Type Data: marked Type, Claryville (New York). C. H. Peck, Aug.)

Spores 7-9 x 6-7  $\mu$ , ellipsoid to subglobose, no ridges nor bands, few or no fine lines, warts 0.1-0.2  $\mu$  high or less, isolated, more or less scattered, Singer VI or at times VII, Schaeffer 2b-55 and 1a-44, white in mass. Pleurocystidia 58-70 x 6-9  $\mu$ , buried, rather deep in subhymenium, not projecting, fusoid, clavate to cylindric, acute or at times appendiculate, granular or banded; cheilocystidia clavate or fusoid, apices more or less acute, banded or granular, 33-48 x 4-7  $\mu$ . Gill-trama of small cells, at times a mediostrate present. Subhymenium not clearly differentiated. Epicutis of

(more, next page)

appressed hyphae, with scattered to numerous erect hyphae which are cylindric, subfusoid, the apices rounded or acute; with granular to banded pilocystidia, 42-53 x 4-8  $\mu$ .

Habitat and Distribution. - On soil, in deciduous woods, Tennessee and North Carolina, June-October.

Discussion. - 1) In Mycologia 35:151. 1943, Singer lists this as a synonym of R. variata Bann.; 2) In Sydowia 11:173. 1957, he lists it as a synonym of R. cyanoxantha var. cyanoxantha, along with Agaricus viridescens Kromb., R. angustata (Pers. ex Secr.) Anon., A. furcatus var. heterophyllus Fr., R. variata, and R. simulans; 3) He further states (p. 173) that the type of R. aeruginascens may also be R. cyanoxantha var. cyanoxantha or var. variata; 4) I do not find this in North American Flora, Kauffman, Singer (Agar.).

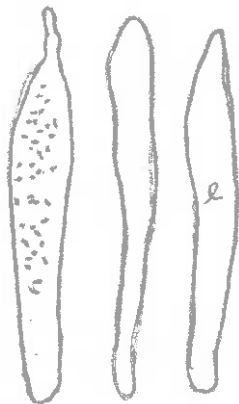
RUSSULA CYANOXANTHA (Schaeff. ex Schw.) Fr.

from Schaeffer's Herbarium  
(UT-24241)

Spores 7-9 x 6-7.5  $\mu$ , ellipsoid, warts 0.1-0.2  $\mu$  high, often punctate, isolated, more rarely fused, or with a few fine lines. Pleurocystidia 46-52 x 6-8  $\mu$ , clavate, blunt or appendiculate, granular or empty, rare and inconspicuous; cheilocystidia 34-47 x 5-7  $\mu$ , ventricose to clavate, acute or appendiculate, empty, few and inconspicuous. Subhymenium cellular. Cuticle essentially an ixocutis 125-150  $\mu$  thick, of interwoven slender hyphae, frequently the free ends more or less erect, the terminal elements often cystidioid.



*Russula cyanoxantha* Achaeff. ex Peck.  
 Schaeffer's Herbarium



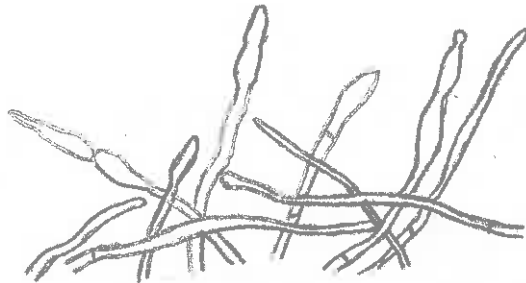
Sp - x 1000



x 3000



Ch - x 1000



Cuticle - x 1000

} Gelatinous  
 Zone  
 ± isocutis

RUSSULA CYANOXANTHA Fr.

Notes on Peck's Collection, from Menands, New York, leg.  
Chas. H. Peck, July.

Spores 9-10.5 x 7.5-8.5  $\mu$ , ellipsoid, warts 0.4-0.7  $\mu$  high, isolated or with few or no fine lines, warts at times fused to form short, broad bands, Singer V, VI, white in mass.

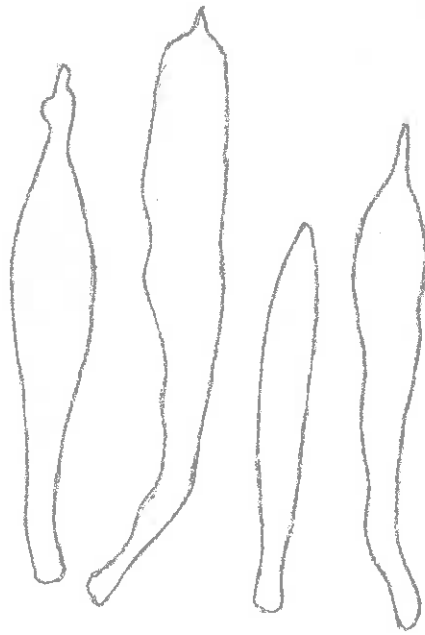
Pleurocystidia 48-80 x 6-11  $\mu$ , fusoid to clavate, at times constricted, apex often mucronate or appendiculate, usually banded; cheilocystidia 32-38 x 3-5  $\mu$ , rare, cylindric to irregular-fusoid, empty. Gill-trama vesiculose. Subhymenium of small cells. Epicutis of more or less erect hyphae which may be septate, some with pointed, others rounded apices; no pilocystidia.

Singer (Sydowia 11:171), describing R. cyanoxantha var. variata (Bann.) Sing., says the gill-trama is predominantly filamentous but with more sphaerocysts than R. cyanoxantha var. cyanoxantha. He calls the erect hyphae on the epicutis "hair-like" (cystidioid) bodies, and those with fusoid tips as "appearing to be dermatopseudocystidia."

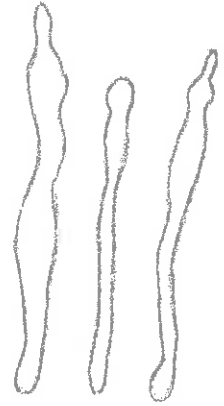
Singer (Sydowia 11:173) gives R. aeruginascens Pk. (N. Y. State Mus. Bull. 25:843. 1900.) as a synonym of R. cyanoxantha var. cyanoxantha.

Taste mild.

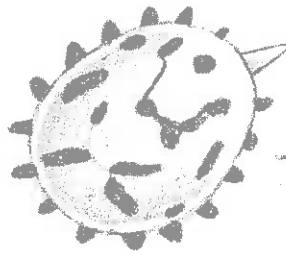
Russula cyanoxantha (Schaeff.) Fr.  
Peck's Coll. - Menands, N. Y. July



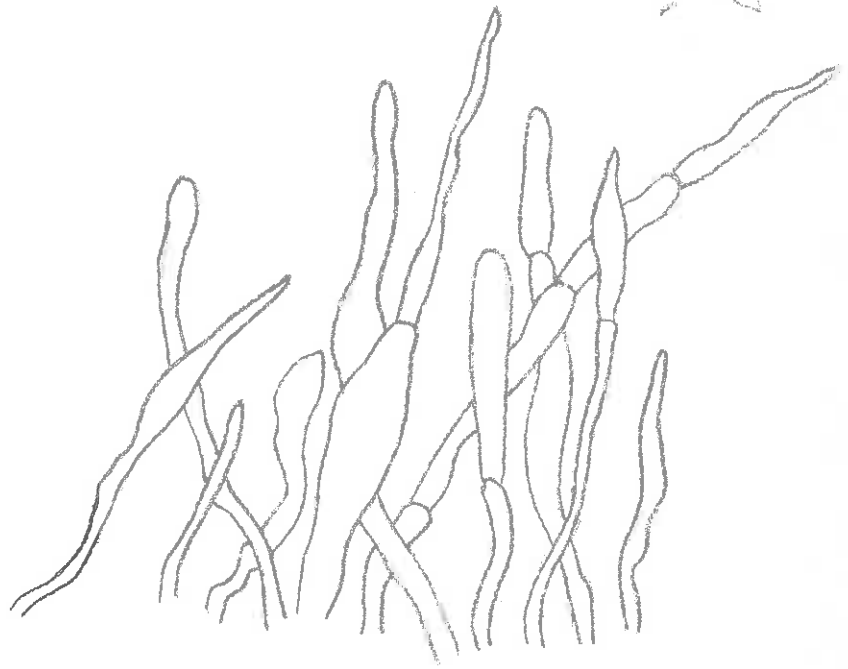
Pl. - x 1000



Ch. - x 1000



— Parts too high!  
This may not be  
R. cyanoxantha



Epicutis - x 1000

10185

RUSSULA CYANOXANTHA (Schw.) Fr.

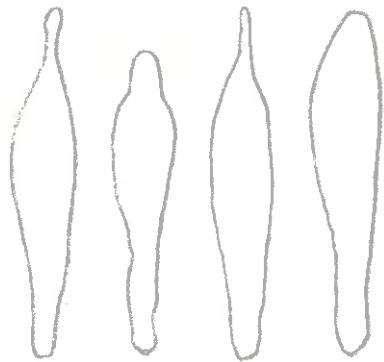
Pileus 7-11 cm. broad, finally depressed and margin more or less upturned, "light grayish vinaceous," center finally tinged olivaceous, glabrous, viscid, pellicle separable part-way, margin short-striate. Context brittle, white, odor and taste mild.

Lamellae adnate, slightly emarginate, white, unchanging, close, equal or a few short, few forked, edge eroded.

Stipe 5-6 cm. x 17-20 mm., white, dry, equal, spongy.

Spongy <sup>red</sup> 7.5-9 x 6-7  $\mu$ , short-ellipsoid or subglobose, warts 0.1-0.2  $\mu$ , more or less rounded, with indistinct fine lines, white in deposits. Pleurocystidia 39-46 x 7-9  $\mu$ , buried, not conspicuous, clavate, at times appendiculate, clear (no bands); cheilocystidia 30-35 x 7-9  $\mu$ , few and inconspicuous, clavate, clear. Cuticle a gelatinous zone, 100-200  $\mu$  thick, hyphae very loosely interwoven, a cutis; no pilocystidia; hypodermium of compact hyphae.

Russula No. 10185 cyanoxantha  
~~newspaper~~



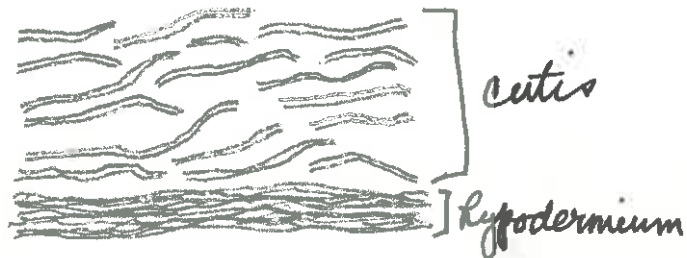
Ps - x 1000



Ch - x 1000



x 3000



Ceticle - x 1000

20876

RUSSULA CYANOXANTHA (Schw.) Fr. *var. cyanoxantha*

Pileus 12 cm. broad, glabrous, depressed, "light vinaceous-lilac," disk "light brownish drab," viscid, margin even. Context thick, firm, white; odor and taste mild.

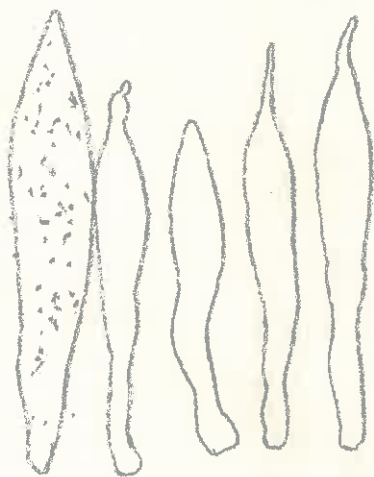
Lamellae slightly adnexed, white then pale cream, close, broad, few forked, none short, edges nearly even.

Stipe 9 cm. x 2.5 cm. (3 cm. when compressed), white, tapering at base, solid.

Spores 7-8 x 5.5-6.3  $\mu$ , ellipsoid, warts 0.3-0.4  $\mu$  high, a few fine lines, white in mass. Pleurocystidia 45-64 x 7-12  $\mu$ , apices pointed or appendiculate, empty or granular; cheilocystidia 38-50 x 5-8  $\mu$ , cylindric-clavate, empty. Epicutis a layer of narrow gelatinous hyphae, with some free ends more or less erect.

Habitat and Distribution. - In oak woods, North Carolina, June.

*Russula* No. 20876  
*cyanoxantha*



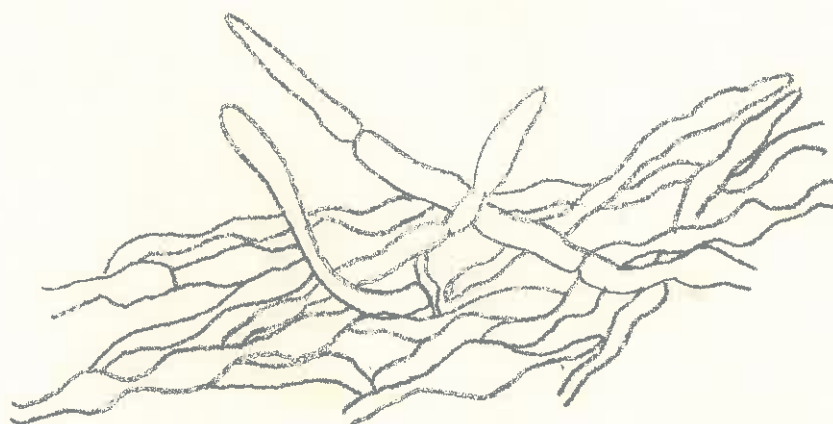
H- x 1000



x 3000



Ch- x 1000



*Epicentris*  
 x 1000

25609

RUSSULA CYANOXANTHA

in deciduous woods, Timberlake Rd., June 23, 1963

Pileus dingy violaceous, soon with tints of green or green and violet mixed. Taste mild.

Lamellae with scattered forking.

Stipe white.

Spores white.



21705

RUSSULA CYANOXANTHA (Schw.) Fr.

Pileus 5-9 cm. broad, convex, disk slightly depressed, somewhat viscid, cuticle separable on margin only, glabrous, strongly rivulose under lens, "pale vinaceous drab" to "pale vinaceous lilac," disk paler or whitish, margin even. Context white, unchanging, firm; odor slightly foetid, taste mild (not acrid nor bitter) but slightly unpleasant.

Lamellae adnate; white to pale cream, unchanging, close, medium broad, narrowed behind, few short, several forking behind, edges fimbriate.

Stipe 4-5 cm. x 12-20 mm., white, unchanging, base pointed, otherwise equal, spongy-stuffed, dry.

Spores 7-8.5 x 5.7-7  $\mu$ , ellipsoid, warts 0.2-0.4  $\mu$  high, with a few fine lines, white in mass. Pleurocystidia and cheilocystidia none found. Epicutis a zone of subparallel or slightly interwoven hyphae, tangentially disposed; surface hyphae repent, no tufts, no pilocystidia.

Habitat and Distribution. - On soil, in deciduous woods, Tennessee, June.

24541

No. ~~24551~~

RUSSULA CYANOXANTHA *var. variata*

Pileus "light vinaceous lilac", central portion greenish (dark green at first, then paler green), viscid, glabrous, disk becoming somewhat green-areolate, even. Context white, unchanging, firm; odor mild, taste slightly acrid.

Lamellae adnate, white, unchanging, forking more or less throughout, close, medium broad, venose-anastomosing.

Stipe white, unchanging, equal, spongy.

Spore deposit: white.

24570 RUSSULA CYANOXANTHA (Schw.) Fr. var. CYANOXANTHA

Pileus at first "light cinnamon drab", finally with green predominating. Context white, unchanging; odor mild, taste mild.

Spores white, 7-8 x 5.5-6.5  $\mu$ , ellipsoid, warts 0.1-0.3  $\mu$  high (at times less than 0.1  $\mu$  high), with a partial reticulum. Pleurocystidia and cheilocystidia present. Cuticle a broad gelatinous zone, with scattered surface, more or less erect hyphae.

RUSSULA CYANOXANTHA Fr.

(Specimen from Univ. Mich. Herb. coll. A. H. Smith (9-27-44),  
det. Singer)

*from S. fork Salmon River, Mt. Hood, Oregon.*

Spores 6.5-8 x 5-6.3  $\mu$ , ellipsoid, warts 0.1-0.2  $\mu$  high,  
fine lines forming more or less a reticulum, Singer IIIb, IV.  
Pleurocystidia 58-82 x 6-10  $\mu$ , ventricose, apices more or less  
appendiculate, empty or granular; cheilocystidia 38-50 x 6-7  $\mu$ ,  
clavate or fusoid, some appendiculate, empty. Epicutis of  
constricted, more or less septate hyphae, the terminal elements  
flask-shaped or subulate, rarely subcapitate.

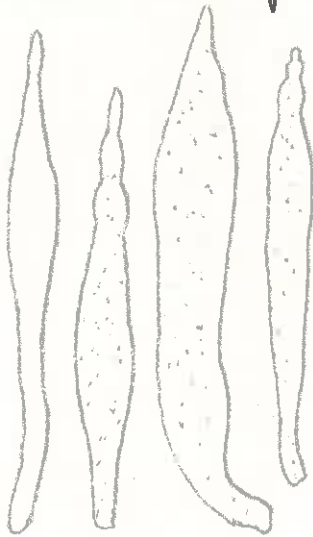
The spores (size, warts, and lines) and epicutis suggest  
R. heterophylla.

*Rumula cyanotantha* Fr.

from U. Mich. Herb. 9-27-44

Coll. A.H. S.

Det. Singer



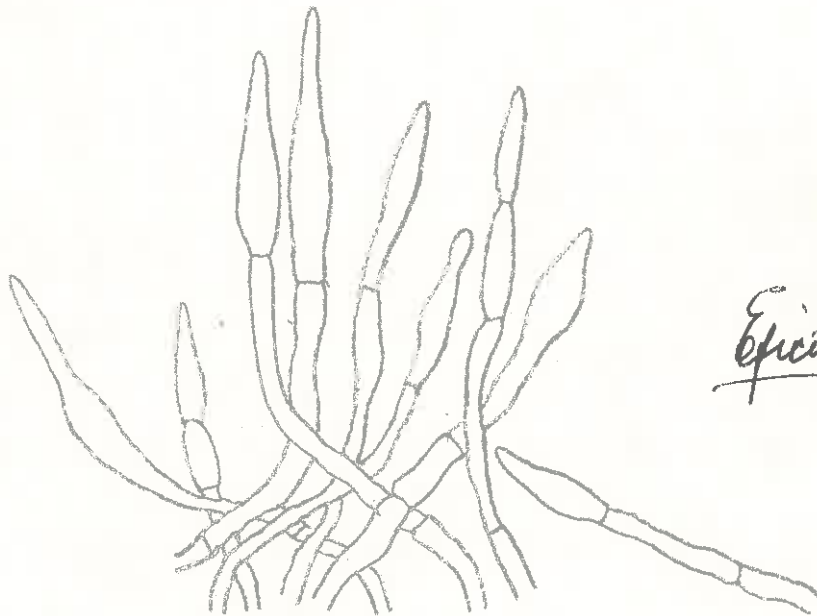
Pl- x 1000



x 3000



Ch- x 1000

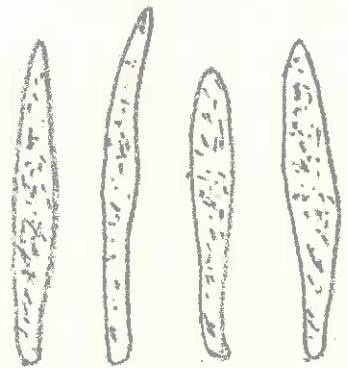


Epicutis x 1000

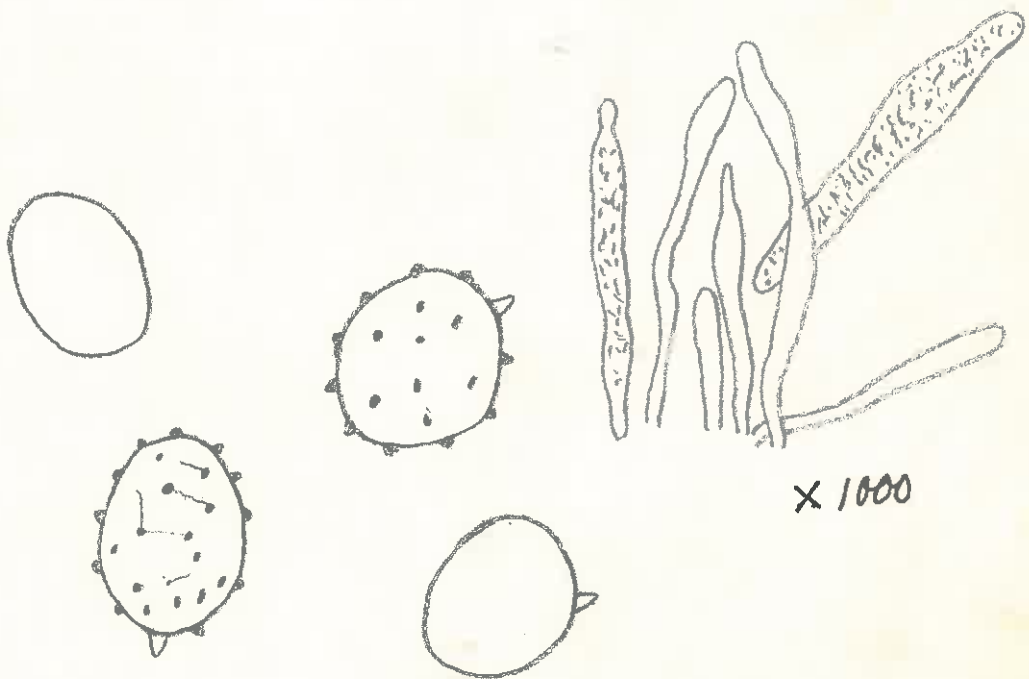
Russula aerugineascens Pk.  
Type



Pl. - x 1000



Ch. - x 1000



x 3000

x 1000

24712

RUSSULA CYANOXANTHA (Schw.) Fr. var. CYANOXANTHA

Pileus 6-11 cm., convex-hemispheric then plane and depressed, "light brownish drab" to "pale vinaceous lilac", at times splashed green or mostly "deep lichen green" to "courage green" but with traces of vinaceous lilac, viscid when wet, cuticle separable on margin only, rivulose under lens, glabrous, even. Context white, firm to hard; odor mild or slight, taste bitter.

Lamellae adnate, white, unchanging, close, narrowed both ends, medium narrow in middle, a few forking behind, more rarely in middle, several short.

Stipe 5-8 cm. x 15-22 mm., white, unchanging, rivulose, equal, solid.

Spores 7-9 x 5.5-7 (8)  $\mu$ , ellipsoid, ends blunt-rounded, warts more or less 0.1  $\mu$ , at times punctate, isolated or with a few fine lines, in mass: white. Other characters as in 20876.

24714

RUSSULA CYANOXANTHA (Schw.) Fr. var. CYANOXANTHA

Pileus 6-9 cm., convex-plane, disc more or less depressed, "light yellowish olive" to "olive lake", glabrous, viscid when wet, cuticle adnate, margin even. Context white, fragile; odor mild, taste unpleasant.

Lamellae adnate, white, close, rather narrow, some forking behind, none short.

Stipe 5-6 cm. x 16-22 mm., white, rivulose, equal, spongy.

Spores in mass: white. All characters suggest R. cyanoxantha var. cyanoxantha.

Its lack of acrid taste and lack of dichotomously forked gills excludes it from var. variata.



RUSSULA CYANOXANTHA Var. VARIATA (Bann.) Singer  
Fedde Rep. Spec. nov. veg. 33:350. 1934

Russula variata Bann. Bot. Gaz. 5:166. 1881.

Russula simulans Burl. Mycologia 13:129. 1921.

Pileus 7-10 cm. broad, depressed, glabrous, viscid, cuticle separable half way, color variable (monochromatic or mixed): "deep grape green," "mignonette green," "olive yellow," "vinaceous drab," "purple drab," disk tinged "pale lilac," margin even or slightly striate in age. Flesh white, unchanging, thick; odor mild, taste acrid <sup>when young, mild in age.</sup> Lamellae adnate, white, unchanging, dichotomously forking one to three times, some short, medium narrow to medium broad, tapering each end, crowded or close, edges even or fimbriate. Stipe 3-11 cm. x 10-25 mm., white, unchanging, dry, equal, rivulose, glabrous, solid then spongy-cavernous.

Spores 7-10 x 7-8  $\mu$ , ellipsoid to subglobose, warts 0.4-0.6  $\mu$  high, with a few lines or none, Singer IV-V, Schaeffer 3a-11, white in mass. Pleurocystidia fusiform, apex more or less appendiculate, 50-76 x 4-7  $\mu$ , some banded; cheilocystidia 28-50 x 5-6  $\mu$ , irregularly fusoid, more or less appendiculate, rarely clavate. Gill-trama vesiculose with some hyphae. Subhymenium of small cells. Epicutis <sup>a cutis, -</sup> a zone (200-400  $\mu$  broad), of interwoven, gelatinous hyphae, bearing some more or less erect hyphae and occasional pilocystidia. (Epicutis like that of No. 20211, R. simulans).

(more, next page)

Habitat and Distribution. - On soil, in deciduous and mixed woods, Tennessee, North Carolina, Virginia, Alabama, and Florida, June-September.

Discussion. - Singer (Sydowia 11:170) places this as a variety of R. cyanoxantha (Russula cyanoxantha var. variata (Bann.) Singer. Fedde Reportorium Spec. nov. veg. 33:350. 1934); he also says R. simulans Burl. (see color illus. Mycol. 13, pl. 7) is a synonym of R. cyanoxantha.

RUSSULA VARIATA Banning

Notes on Type (?)

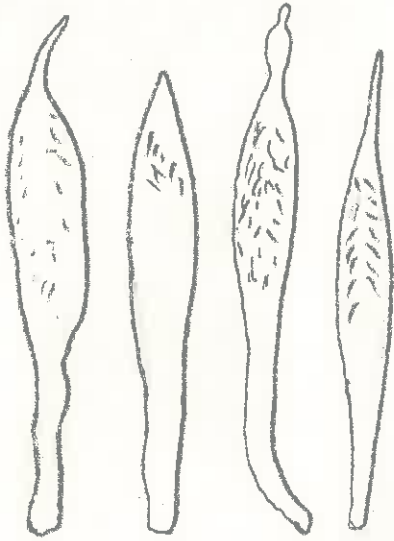
(The specimens marked type are from Worcester and Davenport, July, collected by Peck! A note, signed by J. N. Graves (?) says it is not acceptable as a type, that it one of the xerampelina group and not like R. variata Bann.)

Spores 8-10 (12) x 6-9  $\mu$ , ellipsoid, often more or less inequilateral, warts rather sharp and slender, 0.4-1.0  $\mu$  high, either isolated, or connected by fine lines, at times short-catenulate, Singer IV, V, III, and Schaeffer 5d-50.

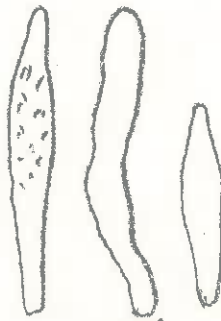
Pleurocystidia 62-74 x 7-10  $\mu$ , ventricose, apex acute or appendiculate, more or less banded; cheilocystidia 27-40 x 5-6  $\mu$ , ventricose to clavate, occasionally minutely banded. Epicutis of narrow (1-3  $\mu$ ) hyphae which are erect to ascendant, or at times repent, with occasional hyphae which are granular or banded and cystidioid.

20906 - *Fussula variata* Bann. & PK.

*Russula variata* Bann.  
Type (?)



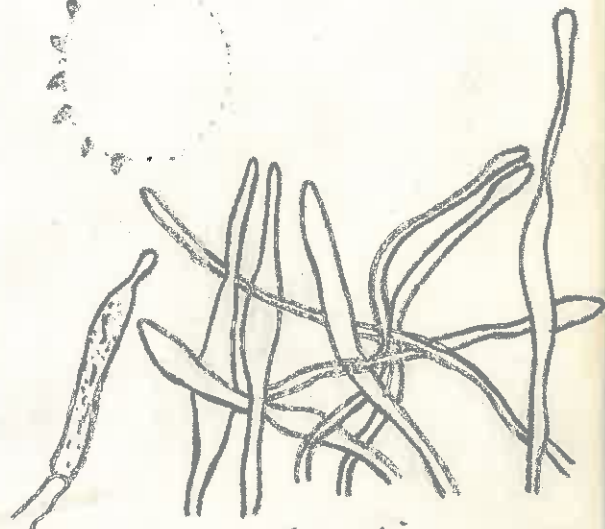
Sp - x 1000



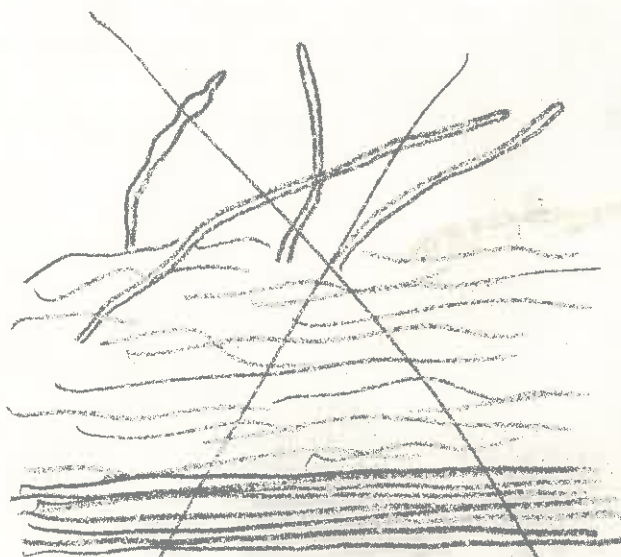
Ch - x 1000



x 3000



Epicuris - x 1000



Epicuris

*epicuris*

*hypodermium*

22306

RUSSULA CYANOXANTHA var. VARIATA (Bann.) Singer

Pileus 9-12 cm. broad, expanding-depressed, "olive-buff," viscid, pellicle separable on margin only, glabrous, margin coarsely striate. Context thick, brittle, whitish, unchanging; odor and taste mild *in age, acid when young.*

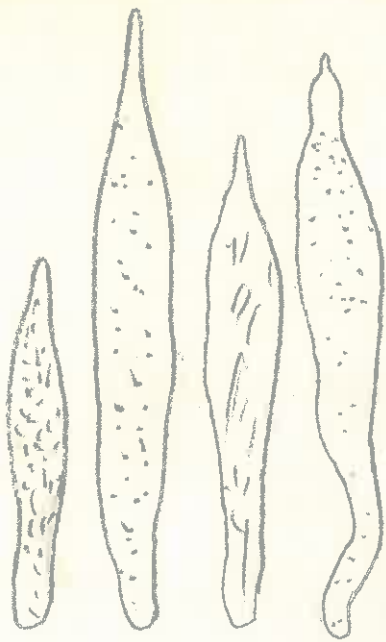
Lamellae narrowly adnate, white, close, narrowed behind, broad in front, none or a few forking near stipe, edges even.

Stipe 9-12 cm. x 20-25 mm., watery-grayish or pallid, unchanging, enlarged downward, fragile, subreticulate all over, spongy-solid.

Spores 7.5-10 (11) x 7-8.5  $\mu$ , ellipsoid, warts 0.7-1.0  $\mu$  high, some broad bands and some fine lines, Singer II, IIIb, in mass: white (Crawshay A). Pleurocystidia 48-78 x 7-10  $\mu$ , ventricose to fusoid, acute or appendiculate, granular or banded; cheilocystidia 39-46 x 6-7  $\mu$ , clavate or subfusoid, acute or mucronate, at times appendiculate, granular or banded. Epicutis *a cutis* a turf of erect hyphae and some pilocystidia. In some sections the turf is flattened and the elements are repent.

Habitat and Distribution. - In soil, hemlock-rhododendron, North Carolina, June.

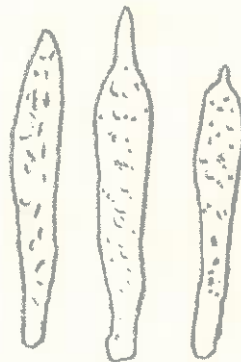
*Fussula* No. ~~42306~~  
*cyanoxantha* var. *variata*



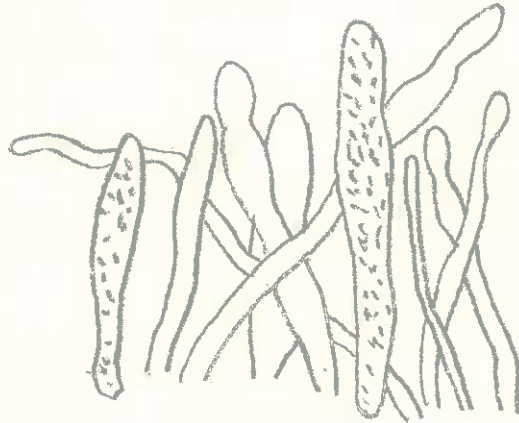
Pl. - x 1000



x 3000



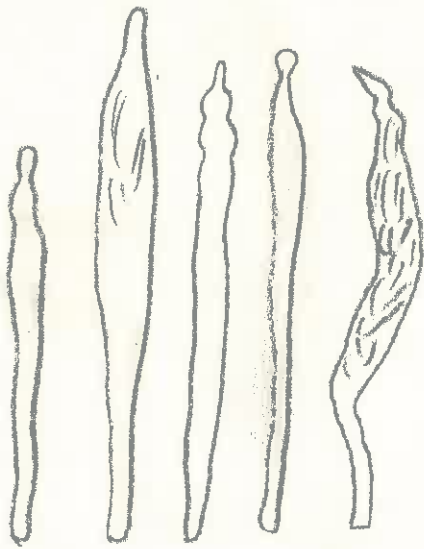
Ch - x 1000



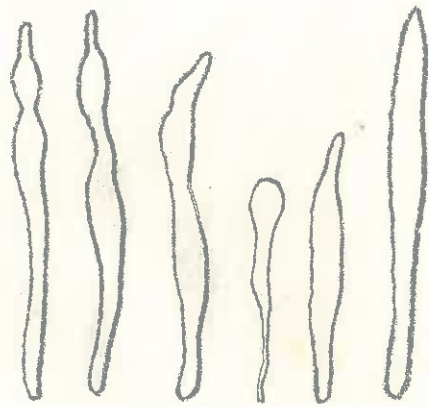
Epicentis - x 1000

Russula variata Bann.

No. 22340



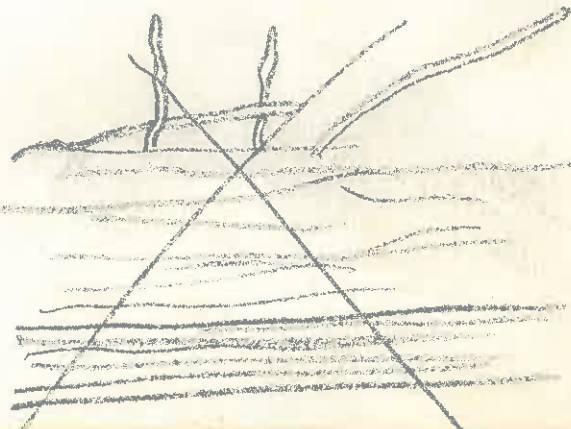
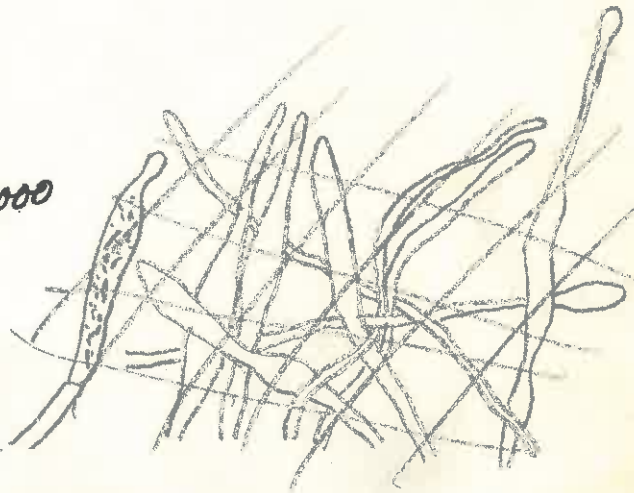
Pl. - x 1000



Ch. - x 1000



x 3000





RUSSULA *cyanoxantha* var. *variata* (Bam.) Sing.  
No. 22321

Pileus 8-12 cm. broad, convex, then depressed-infundibuliform, glabrous, viscid, pellicle separable half-way, disk greenish with yellowish splashes, elsewhere "pale vinaceous lilac," margin even. Flesh thick, brittle, white, unchanging; odor and taste ~~acid~~ <sup>acid becoming mild in age</sup>. Lamellae adnexed, white, few forking, none short, narrowed behind, medium broad in front, edges even. Stipe 5-9 cm. x 20-30 mm., white, hard, glabrous, equal, solid.

Spores 7-8 x 5-5.5 (6)  $\mu$ , short-ellipsoid, warty (warts  $\pm 0.5 \mu$  high) with a few broken reticulations, white in mass,

Turf of pileus of slender, long hyphae more or less tapering to a point.

Habitat and Distribution. - In deciduous woods, Tennessee, July.

RUSSULA No. 22712

*Cyanoxantha* var. *variata* (Bonn.) Singer

Pileus 5-9 cm. broad, convex, finally expanding-depressed, viscid, pellicle separable to disk, when young "purplish-lilac" with green tints, at maturity "vetiver green" with lilac tints persisting on disk, glabrous, margin even when young, becoming coarsely and short striate. Flesh white, unchanging, brittle; odor mild, taste <sup>mild in age, acid when young</sup> ~~slight or none~~. Lamellae adnate, soon seceding, close, medium broad, sub-ventricose, white, becoming very pale cream, many forking at base, rarely forking elsewhere, few short. Stipe 3-4 cm. x 1.5-2 (3 when compressed) cm., white, unchanging, glabrous, dry, solid then spongy-hollow, equal.

Spores 7-8 x 5-6  $\mu$ , ellipsoid, warty, few short reticulations. Pleurocystidia and cheilocystidia few, sub-fusiform, 38-45 x 5-6  $\mu$ . Epicutis of loosely interwoven, gelatinous hyphae (Sav. 11), 1.5-3  $\mu$  broad.

Habitat and Distribution. - On soil, deciduous woods, Tennessee, October.



22340 - *Russula variata* Bann. & Pk.

24553 RUSSULA CYANOXANTHA var. VARIATA (Banning) Sing.

Pileus 11 cm. broad, depressed, "purple drab" to "dark purple drab," with areas of dark green, appearing cracked, velutinous, the epicutis more or less smoky green, subviscid, cuticle separable half-way, even. Context white, unchanging; odor mild, taste slightly acrid.

Lamellae adnate, white, unchanging, forked throughout, more or less venose, close, narrow, broadest in front.

Stipe 7 cm. x 23 mm., white, unchanging, rivulose, equal or tapering slightly at base, firm, center becoming spongy.

Spores white in deposits.

Pileus 5.5-7 cm., hemispheric-convex, expanding, then depressed, "purple drab", or entirely greenish, or greenish mixed with lilac or vinaceous, glabrous, viscid, pellicle separable on margin or half-way, even, scarcely striate in age. Context white, firm; odor mild, taste slightly and tardily acrid.

Lamellae adnate, white, close, narrow, forking frequent, often dichotomously.

Stipe 5-8 cm. x 13-17 mm., white, rivulose, glabrous, equal, stuffed.

24826      RUSSULA CYANOXANTHA var. VARIATA (Bann.) Sing.

Pileus 5.5-7 cm., hemispheric-convex, expanding, then depressed, "purple drab", or entirely greenish, or greenish mixed with lilac or vinaceous, glabrous, viscid, pellicle separable on margin or half-way, even, scarcely striate in age. Context white, firm; odor mild, taste slightly and tardily acrid.

Lamellae adnate, white, close, narrow, forking frequent, often dichotomously.

Stipe 5-8 cm. x 13-17 mm., white, rivulose, glabrous, equal, stuffed.

Spores white; all microscopic characters agree with those of typical collections.



24826 - *Russula cyanoxantha* var. *variata* (Pann.) Sing.

26059

RUSSULA CYANOXANTHA var. VARIATA

In mixed woods, Cades Cove, Sept. 15, 1963.

Pileus "pale brownish drab" on one side, "citrine drab" on other, more or less areolate.

Lamellae forked, often dichotomous.

Stipe white.

Spores white.



RUSSULA SIMULANS Burl. (*R. cyanoxantha* var. *variata*  
(Bann.) Singer)

Mycologia 13: 129. 1921.

Illus.: Mycol. 13, pl. 7, figs. 1 and 5.

Pileus 6-15 cm. broad, convex, finally expanding-wavy and slightly depressed, viscid, "lavender" to "pale vinaceous-lilac," glabrous (but surface rivulose on margin at maturity), even or faintly striate, pellicle separable to disk. Flesh white, brittle; odor and taste mild. Lamellae adnate with a short decurrent tooth, white, unchanging, mostly equal, few short, occasionally forked at base, medium broad, close. Stipe 6 cm. x 2.0-2.5 cm., white, unchanging, rivulose, solid, equal.

Spores somewhat variable in size, 7.5-9.5 x 6-7  $\mu$ , mostly 8 x 6  $\mu$ , ellipsoidal, warts 0.4-0.6  $\mu$  high, with fine lines connecting adjacent warts, or warts isolated, white in mass. Pleurocystidia 50-75 x 5-7  $\mu$ , fusoid to subcylindric, apex at times pointed or mucronate, not banded, originating deep in the trama and often inconspicuous; cheilocystidia few or none, when present 45-52 x 5-7  $\mu$ , fusoid. Gill-trama vesiculose. Subhymenium of small cells, rather broad. Epicutis a zone of gelatinous, interwoven, narrow (1-2  $\mu$ ) hyphae, with scattered, more or less erect to repent hyphae.

Habitat and Distribution. - On soil, in mixed woods, Hesler's woods, Knox County, Tennessee, October 7, 1951.

Discussion. - Singer (Sydowia 11:170) places this as a synonym, along with *R. variata*, under *R. cyanoxantha* var. *variata* (Bann.) Singer.

Russula simulans Burd.

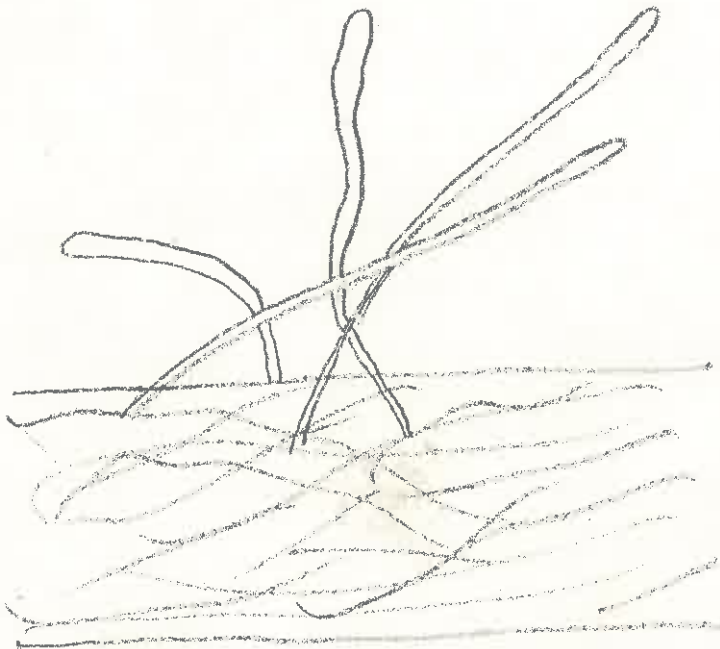
No. 20211 = ~~a form of~~ cypnoxantha ~~f.~~ var. variata



Pl. - x 1000



Ch. - x 1000



RUSSULA CYSTIDIOSA Murrill

Bull. Torrey Bot. Club 67:145. 1940

Russula subfragiliformis Murr. Lloydia 6:217. 1943.

Pileus 4-11 cm. broad, convex to depressed, somewhat viscid, slightly subvelutinous, uniformly miniatous, near "jasper red" and "nopal red," peeling readily, margin short-striate. Flesh thin, white, reddish under cuticle, unchanging; odor none, taste mild or in young lamellae weakly acrid or slightly bitterish. Lamellae attenuate behind, equal, not forked, medium broad, close to subdistant, white to pale-yellow; ~~cystidia clavate or fusoid, pointed or blunt, hyaline, thin-walled, about 30-60 x 8-12  $\mu$ .~~ Stipe 4-7 cm. x 10-22 mm., subequal, glabrous to pruinose-scurfy, white or flushed pink, unchanging, solid then hollow.

Notes on Type

{ 718353 Sugarfoot near Gainesville, Fla.  
Call. West, Arnold, & Murrill; det.  
Murrill. Sept 29, 1938

Spores 9-12 x 9-10  $\mu$ , ellipsoid, warts 0.8-1.8  $\mu$  high<sup>out</sup> more or less cylindric, catenulate or a few isolated, with some fine lines, Singer II, IV, VI, <sup>VIII</sup> in mass: Crawshay D. Pleurocystidia 65-93 x 7-8  $\mu$ , ventricose or constricted, appendiculate, granular, banded, or empty; cheilocystidia 45-57 x 6-8  $\mu$ , ventricose, rounded or mucronate, more or less banded. Epicutis a tangle of ascendant or erect hyphae, which are nodulose-constricted, with numerous clavate, banded pilocystidia, 50-85 x 4-8  $\mu$ .

(more, next page)

Notes on Murrill's F 18448 (not Type)

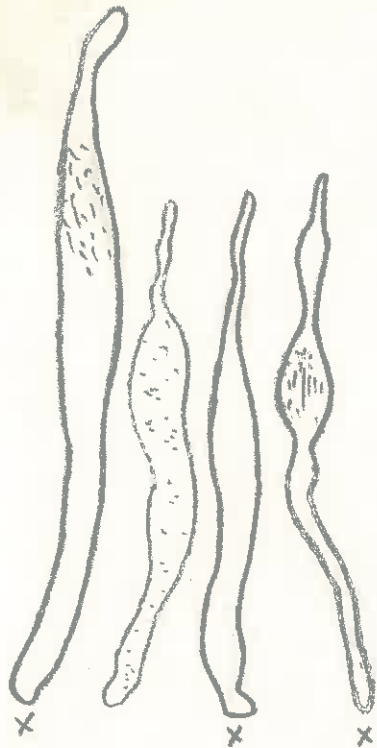
Spores 8-11 x 6.5-9  $\mu$ , ellipsoid, warts 0.4-0.7  $\mu$  high, with or without fine lines, Singer VI, IV, rarely IIIb, in mass: Crawshay D. Pleurocystidia 42-74 x 6-9  $\mu$ , fusoid to ventricose, apices rounded, acute, appendiculate or mucronate, banded or a few empty; cheilocystidia 35-68 x 5-7  $\mu$ , fusoid to subclavate, apices acute, mucronate, or appendiculate, banded or a few empty. Epicutis a zone of narrow, more or less interwoven hyphae, many of which are more or less erect, with rather numerous to scattered clavate, minutely banded pilocystidia which may be nodulose-constricted, with acute apices, 45-100 x 3-4  $\mu$ , - the zone forming a minute turf.

Habitat and Distribution. - On soil, under oak, Florida, summer.

Discussion. - Singer (Sydowia 11:228) says the types of R. cystidiosa and R. subfragiliformis are very similar. He states that the epicutis is a trichodermium made up of hyphae which are often fasciculate, forming strands of peg-like formations. I found no fascicles nor "peg-like" formations.

See subfragiliformis !

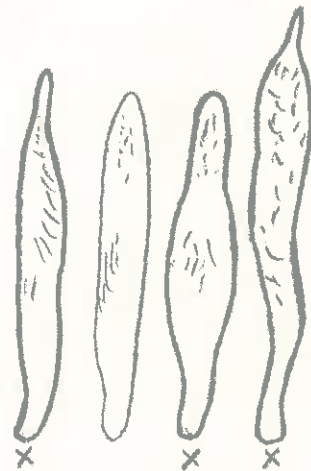
Russula cyathifera Murrill  
Type



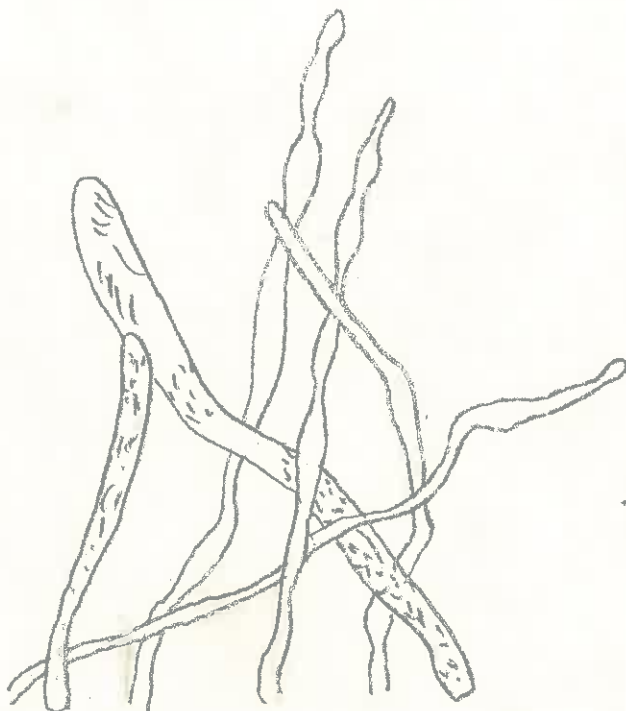
Pl. x 1000



x 3000



Ch. - x 1000



Epith. x 1000

RUSSULA DADMUNII Singer

Sydowia 2:39. 1948

Pileus 3-6.5 cm. broad, convex, depressed, finally concave, "withered rose" to "tanagra" (M & P) to mummy shades, viscid but drying rapidly, sulcate. Context white, unchanging; odor of iodoform in stipe-base, taste mild.

Lamellae attenuate behind, ochraceous, few forked, subclose, anastomosing.

Stipe usually as long as or longer than diam. pileus, white, sordid when touched, equal or subequal, spongy-stuffed then hollow.

Spores 7.5-10 x 6-7.5  $\mu$ , orn. IIIa, VIII, II in mass: deeper than E. Cystidia often appendiculate. No dermatopseudocystidia.

On soil, always with Tsuga canadensis, forming mycorrhiza, Massachusetts to Michigan, summer.

Near punctata but differs mainly in the color of the pileus and the mycorrhizal partner.

RUSSULA DAVISII Burl.

Mycologia 10:93. 1918

Pileus up to 18 cm. broad, convex, depressed, then expanded, Pinard-yellow, or tinged dull-reddish on margin, viscid, pellicle separable, pruinose then glabrous, margin even (at least striations not pronounced. Context white, firm but brittle; odor not distinctive, taste mild.

Lamellae adnexed to slightly decurrent, buff-yellow, equal, forking behind, venose, pilose, narrowed behind, broad in front (up to 13 mm.), distant.

Stipe up to 7 cm. x 20-30 mm., white, more or less washed bluish-pink, slightly discolored grayish or sordid, expanded at apex, tapering downward, rather firm, spongy then hollow, glabrous.

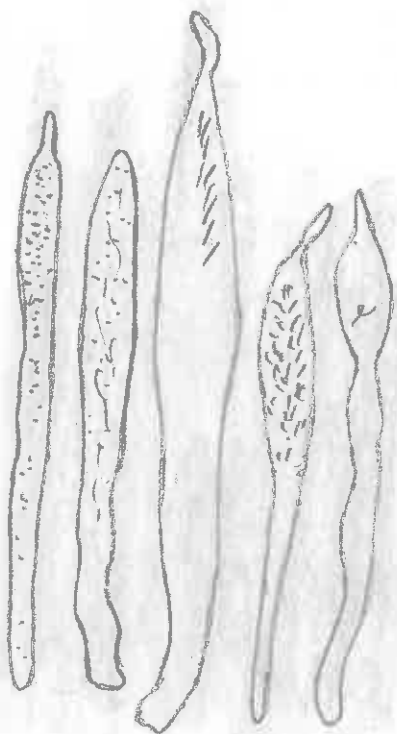
Spores 9-13 x 8-9 (11)  $\mu$ , ellipsoid, warts (0.5) 0.8-1.4  $\mu$  high, many isolated, some catenulate, a few with some fine lines, in mass: ochraceous. <sup>(6-7)</sup> Pleurocystidia 66-94 x 5-12  $\mu$ , numerous, conspicuous, variable in shape and diameter, cylindric, clavate, fusoid, irregular, at times constricted, acute or appendiculate, empty, granular, or banded; cheilocystidia 50-70 x 4-10  $\mu$ , somewhat similar. Subhymenium of small cells. Cuticle a trichodermium, often more or less a turf, with trichodermial tufts of hyphae at intervals. No pilocystidia, and no hypodermium.

Habit, habitat, and distribution. - Under chestnut trees, solitary or gregarious, Massachusetts, Aug.-Sept.

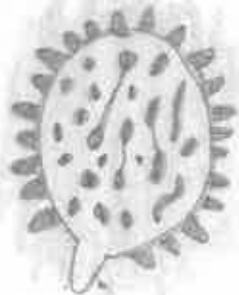
Observations. - Burlingham gives spores ochraceous, 10-12 x 8.5-10  $\mu$ . Related to Betulinae group, hardly to Decolorantes. Almost as compact as some of Compactae. Singer (Mycologia 34:76) gives spores 9.5-14.5 x 7-13  $\mu$ , warts 1.6  $\mu$  high, type VI, cheilocystidia 70 x 9-10  $\mu$ , acute. Says it is near to or identical with R. olivacea (Schaeff.) Fr.



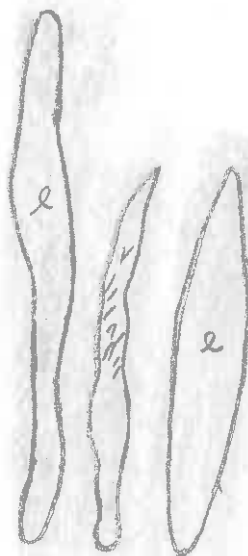
*Russula davisii* Burl.  
Type



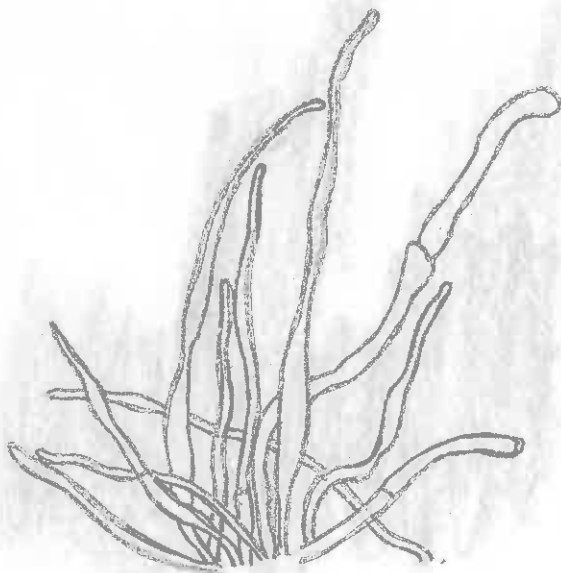
Sp - x 1000



x 3000



Sp - x 1000



Cuticle - x 1000  
(A tuft of hyphae)

7  
RUSSULA DECOLORANS Fr. ??

Epicr. Myc. p. 361. 1838

Spores too small +  
too pale for  
decolorans(?)

coppery-orange, salmon to

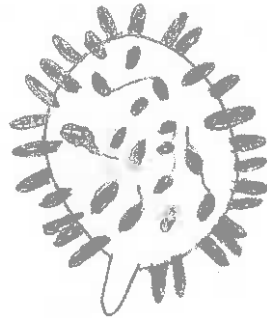
Pileus 9 cm. broad, depressed, "light Jasper red," viscid, cuticle partially separable, glabrous, margin striate in age. Flesh white, <sup>reddish then</sup> cinereous in age or where injured, fragile; odor and taste mild. Lamellae white, then maize-yellow, grayish tinged on drying, close, broad, some forking behind, edges even. Stipe 6 cm. x 10 mm., white, cinereous in age, equal, spongy, dry.

Spores 8-9 x 6.5-7.5  $\mu$ , ellipsoid, warts 0.6-1.2  $\mu$  high, isolated or rarely with a few short lines, at times fused, apiculus 2.7-3.2  $\mu$  long, pale cream in mass (Crawshay C). Pleurocystidia 78-93 x 9-10  $\mu$ , fusoid, banded; cheilocystidia 41-50 x 8-11  $\mu$ , some banded, fusoid. Gill-trama vesiculose. Subhymenium a narrow zone of small cells. Epicutis a repent, opaque zone of more or less parallel hyphae, zone 20-30  $\mu$  broad, above which is a gelatinous zone 40-60  $\mu$  thick, of narrow, interwoven hyphae; scattered (imbedded) through the zone are clavate, dark-content pilocystidia which rarely protrude and then only slightly.

The epicutis structure differs from Peck's collection of R. decolorans.

*Russula decolorans* Fr.

from Schaeffer's Herbarium



x 3000

9.5 - 12 x 8.5 - 10  $\mu$ .

Warts 0.7 - 1.5  $\mu$  high, isolated or with a few lines.

Ellipsoid to subglobose,

RUSSULA DECOLORANS Fr.

Horicon,  
Notes on Peck collection, Warren Co., July 20-22, 1905. It  
is marked "variety" (on the label).

Spores 7-8.5 x 6.3-7  $\mu$ , ellipsoid to subglobose, warts  
0.2-0.4  $\mu$  high, fine lines none or very few and short, warts  
fused to form short, broad bands. Pleurocystidia 38-63 x  
5-7  $\mu$ , fusoid to subclavate, occasionally banded; cheilocystidia  
fusoid, ventricose, to subclavate, 38-42 x 5-8  $\mu$ , apex  
occasionally appendiculate. Gill-trama vesiculose. Subhymenium  
of small cells, - a rather broad zone. Epicutis a gelatinous  
zone, 70-100  $\mu$  thick, of interwoven narrow (1-2  $\mu$ ) hyphae,  
with free ends more or less erect, with scattered pilocystidia  
30-70 x 2-5  $\mu$ , - the general structure quite similar to that of  
R. cyanoxantha var. variata (= simulans), which see.

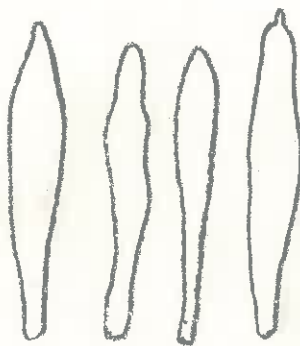
Schaeffer, J., Russula-Monographie, p. 136, gives the spores  
10-14 x 9-12  $\mu$ , warts up to 1.5  $\mu$  high, preponderately isolated.

Singer (Mycol 35:151) says this, in part, is  
R. rubriceps (not R. decolorans Fr.).

*Russula decolorans* Fr. var.  
Peck Coll. Warren Co. July 20-22, 1905



Pl. -  $\times 1000$



Ch. -  $\times 1000$

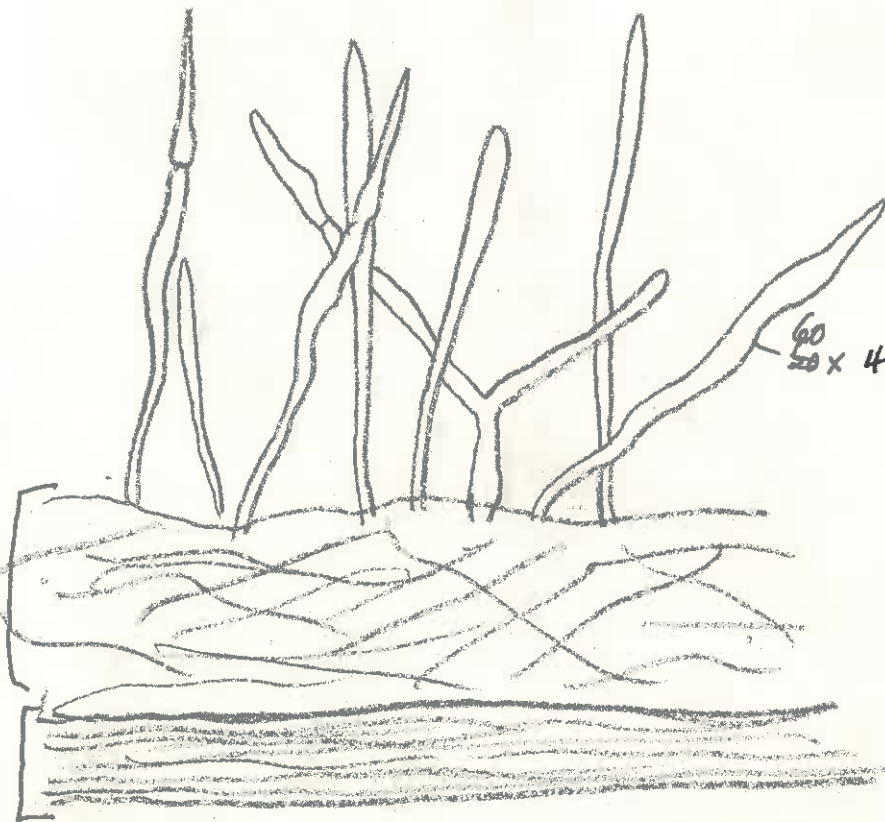


Epicutes

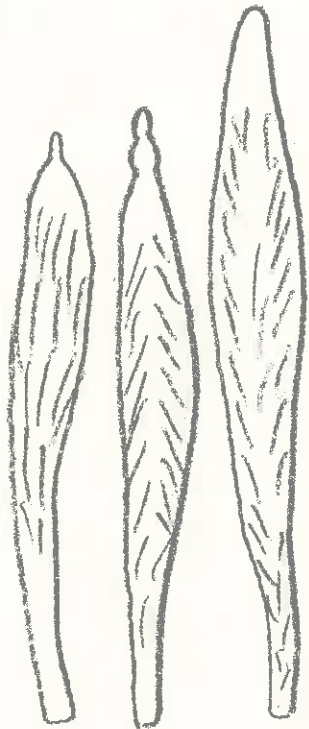
70-100 $\mu$   
broad

60  
50  $\times$  4 or 5 $\mu$

20-30 $\mu$   
broad



*Russula decolorans* Fr.  
No. 21483



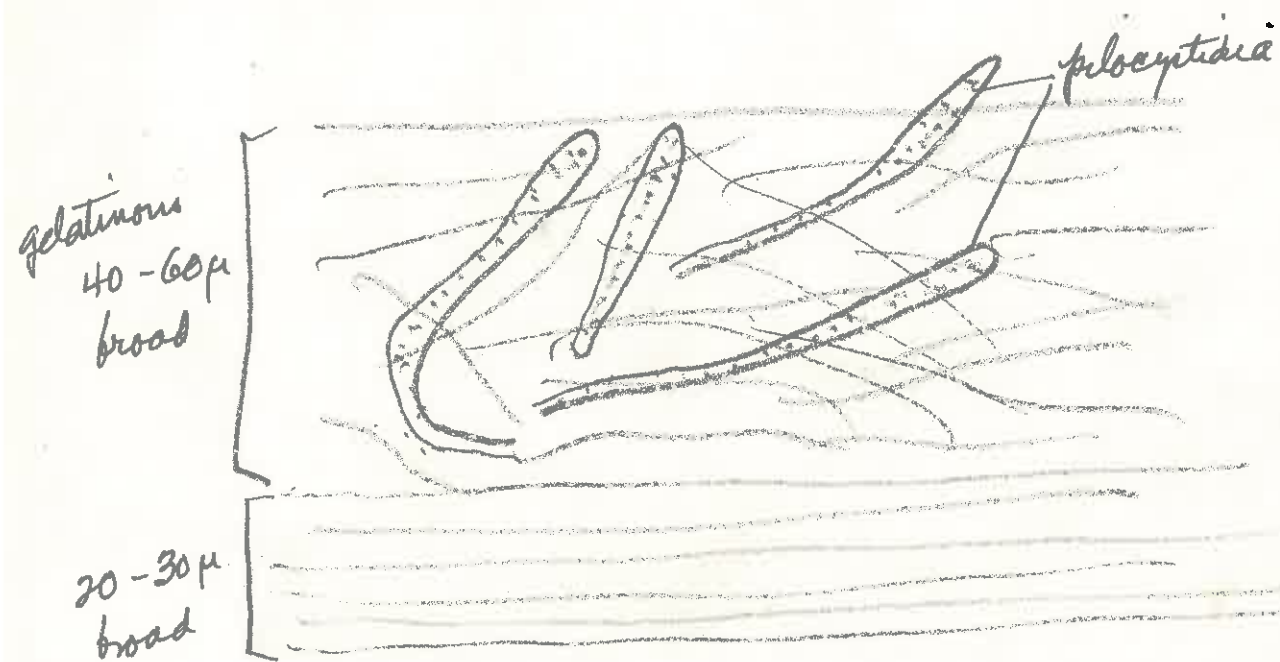
Sp. - x 1000



Ch. - x 1000



x 3000



Epicutis

RUSSULA DELICA Fr.

Epicr. Myc. p. 350. 1838

Fileus 6-12 cm. broad, convex-depressed, finally upturned and infundibuliform, white, at times with yellowish or brownish stains, dry, glabrous at first, finally somewhat tomentose (from separation of surface hyphae), margin even, involute then spreading. Flesh white, unchanging, firm; odor mild, taste slightly acrid. Lamellae adnate becoming short-decurrent, white with a tint of pale blue-green, close to subdistant, medium narrow, tapering at both ends, some forking, alternating long and short, edges entire, at times pale blue-green. Stipe 1.5-2.5 cm. x 1.5-2 cm.; white, with a blue-green ring at apex, glabrous, apex tomentose, firm, dry, equal, solid.

Spores 9-13 x 8-9.5  $\mu$ , ellipsoid to subglobose, warts 1.2-1.6  $\mu$  high, reticulum of fine lines, more or less continuous or broken, Singer II, IIIb, Schaeffer 6f, color in mass: whitish or very pale cream (Crawshay A-B). Pleurocystidia 61-96 x 7-10  $\mu$ , abundant, fusoid cylindric-clavate at times mucronate; cheilocystidia 45-56 x 6-8  $\mu$ , similar, occasionally with an exudate at the apex. Gill-trama vesiculose. Subhymenium of small cells. Epicutis of appressed hyphae.

Habitat and Distribution. - On soil, in deciduous and mixed woods, Tennessee, North Carolina, Florida, Alabama, Mississippi, July-December.

Singer Mycologia 39:173.

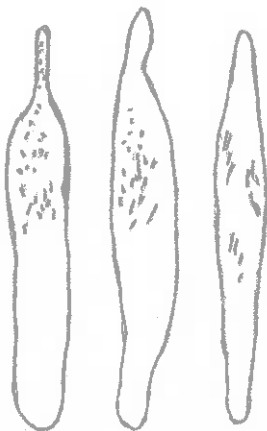
RUSSULA DELICA Fr.

Schaeffer's Herbarium  
(UT-24242)

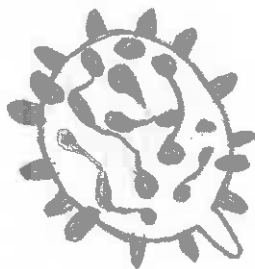
Spores 9-12 x 8-10  $\mu$ , ellipsoid, warts 0.8-1.4  $\mu$  high, with a few lines forming an incomplete reticulum. Pleurocystidia 48-54 x 7-8  $\mu$ , ventricose, appendiculate, minutely banded; cheilocystidia 40-50 x 6-7  $\mu$  ventricose, clavate, to subcylindric, apices obtuse, granular or banded. Subhymenium cellular. Cuticle a cutis, with a few free hyphal ends more or less erect.



*Russula delica* Fr.  
 Schaeffer's Herbarium



Sp - x 1000



x 3000

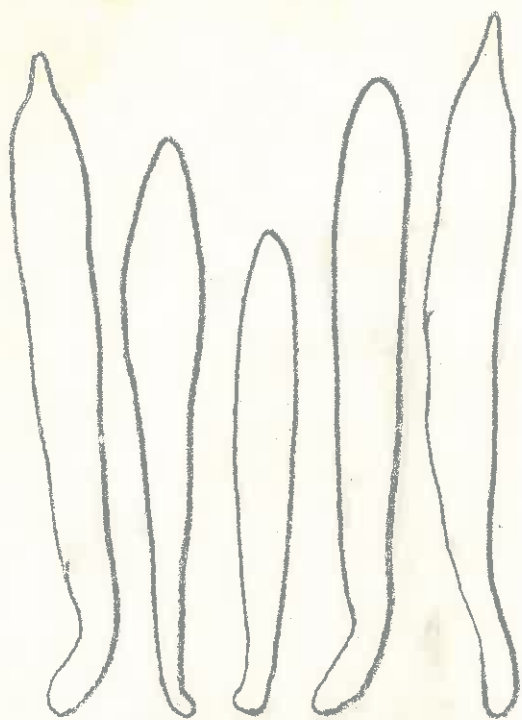


Ch - x 1000

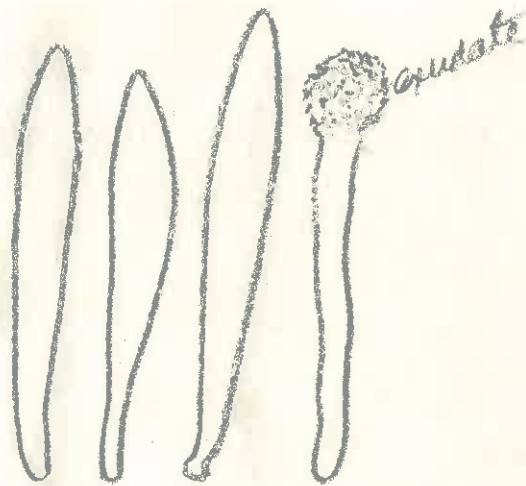


Article - a cutis - x 1000  
 (a few  $\pm$  erect free ends)

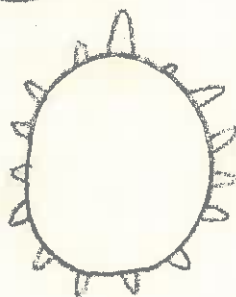
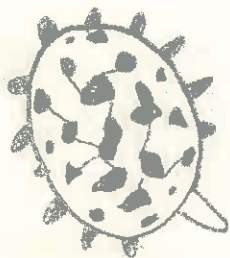
Pussula delicata Fries - No. 20884



Sp. - X 1000



Ch. - X 1000



Epicutis (Cuticle)  
as in R. brevipes

RUSSULA BREVIPES Pk.

(R. delica Fr.)

*New York State Mus. Ann. Rept. 54:178. 1901.*

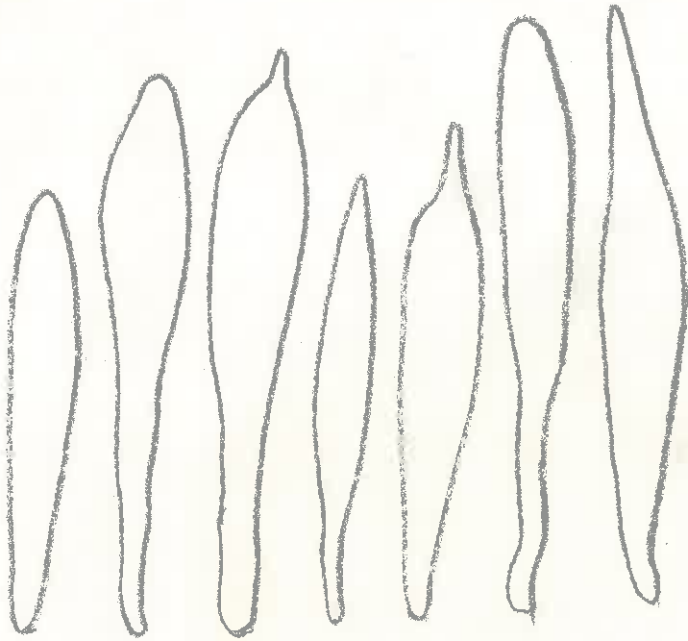
Notes on Peck's Type

(Type Data: Marked Type. Quogue, Long Island. leg. Chas. Peck.)

Spores 9-11 x 8.5-10  $\mu$ , globose to subglobose or short-ellipsoid, reticulum of fine broken lines, warts 1.0-1.7  $\mu$  high, conspicuous and rather numerous. Pleurocystidia 56-76 x 7-11  $\mu$ , fusoid to clavate, minutely banded to granular, numerous; cheilocystidia 40-50 x 6-8  $\mu$ , fusoid to slightly bottle-shaped. Gill-trama vesiculose. Subhymenium of small cells. <sup>Cuticle</sup> ~~Epicutis~~ of appressed hyphae.

Russula brevipes PK. (= R. delicata Fr.)

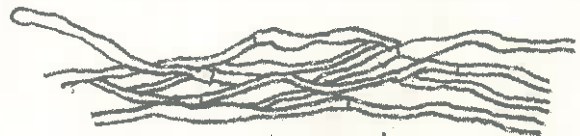
Type  
sp.



Pl. - x 1000



ch. - x 1000



Epicutis - x 1000



x 3000





3978 - *Russula delica* Fr. - x 1/2

(Photo by H. R. Milliken)

No. 20884. Pussula delica Frier



22344  
~~20884~~ - *Russula delica* Fr.

RUSSULA DELICA

30240

~~XXXXXXXXXX~~

Indian Creek, June 28, 1968.

Spores white with a pale cream tint.



RUSSULA DENSIFOLIA (Secr.) Gillet

Champ. Fr., p. 231. 1876

see  
Rudowia 11-158-159

Pileus 5-12 cm. broad, convex, then depressed, viscid at least when young, pallid then dingy to grayish, grayish-brown to smoky, finally blackish, glabrous, pellicle separable on the margin only, <sup>or at times half-way,</sup> margin pubescent and even or <sup>in age</sup> slightly striate. Flesh white, red then black where injured, medium thick; odor slight, taste strong, unpleasant. Lamellae adnate to subdecurrent, close to crowded, medium broad, some forking behind, few to many short, white, then cream, finally sordid grayish, red then black where bruised. Stipe <sup>3</sup> 4-6 cm. x 12-30 mm., white, then sordid gray, red then black where wounded, pruinose, glabrescent, equal or attenuated at base, stuffed, dry.

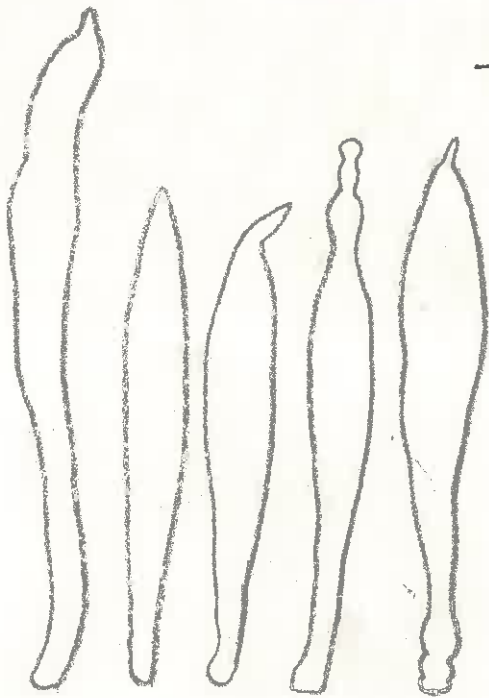
Spores 7-9 x 6-7  $\mu$ , ellipsoid, somewhat reticulate, with fine lines or short, broad ridges, warts <sup>0.1-0.2(0.3) $\mu$</sup>  ~~0.3-0.5  $\mu$~~  high, <sup>or at times less than 0.1  $\mu$</sup>  ~~apiculus~~ <sup>prominent (up to 2.5  $\mu$  long)</sup>, ornamentation Singer IIIa and <sup>III</sup> b, Schaeffer 7b-61, white in mass. Pleurocystidia scattered, conspicuous, fusoid, often irregularly so, at times mucronate, 58-91 x 7-10  $\mu$ ; cheilocystidia 28-50 x 6-10  $\mu$ , clavate, more or less capitate, or fusoid. Gill-trama vesiculose. Subhymenium of small cells. Epicutis of repent <sup>gel</sup> glutinous hyphae; toward the margin with a dense zone of tangled to erect hyphae <sup>brownish hyphae and</sup> intermixed with clavate pilocystidia, <sup>some  $\pm$  banded.</sup>

OK, see  
23041

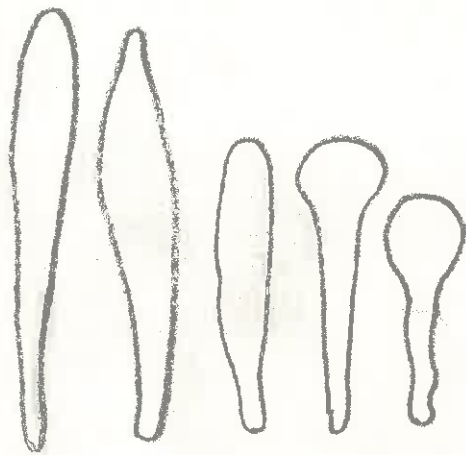
Habitat and Distribution. - On soil, in conifer and deciduous woods, Tennessee, North Carolina, and Florida, and doubtless throughout the Southeast, June-October.

*Russula densifolia* (Acar.) Gill

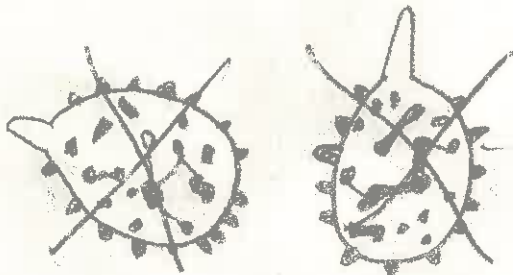
No. 23041



Gl. - x 1000



Ch. - x 1000



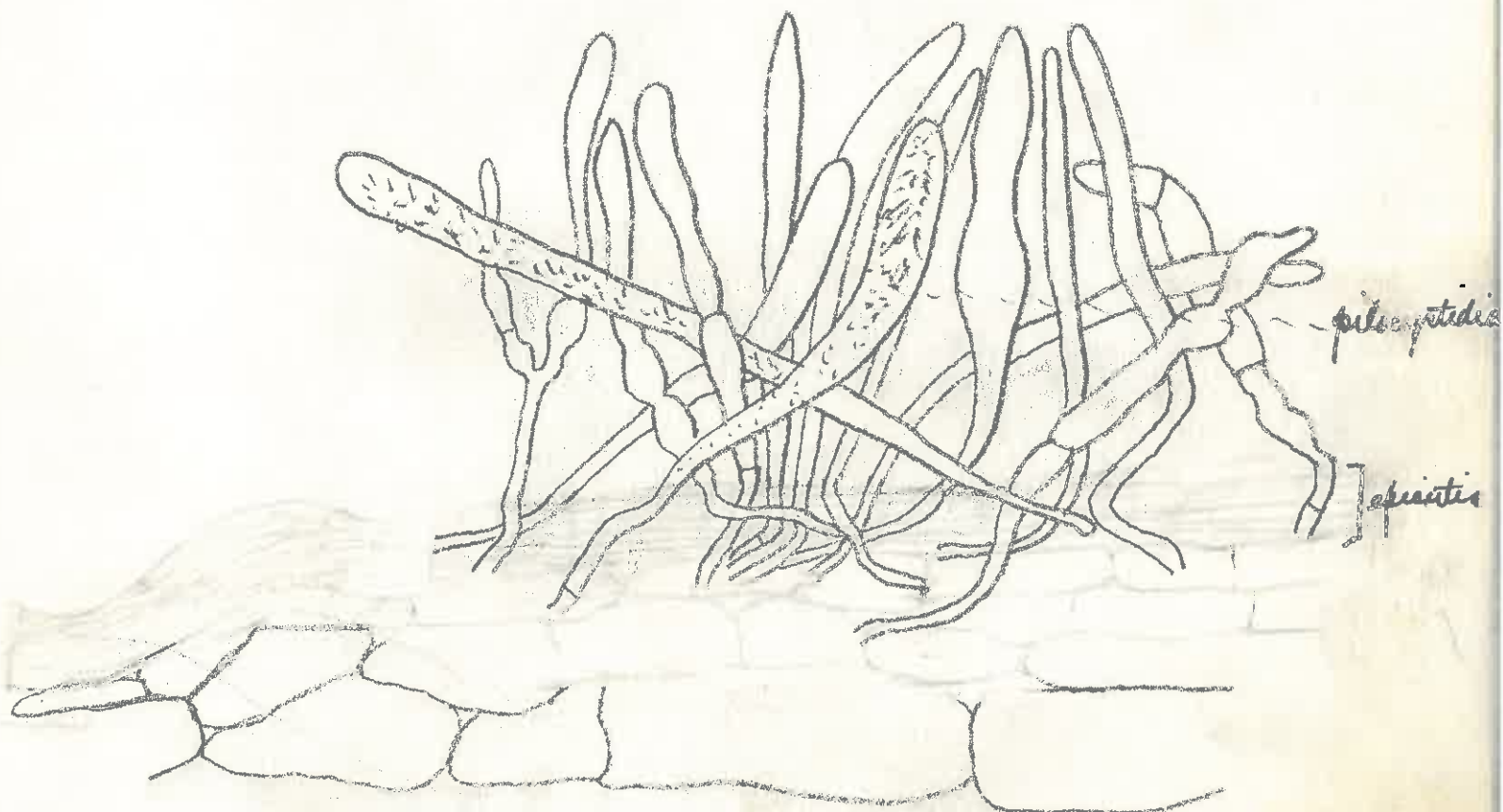
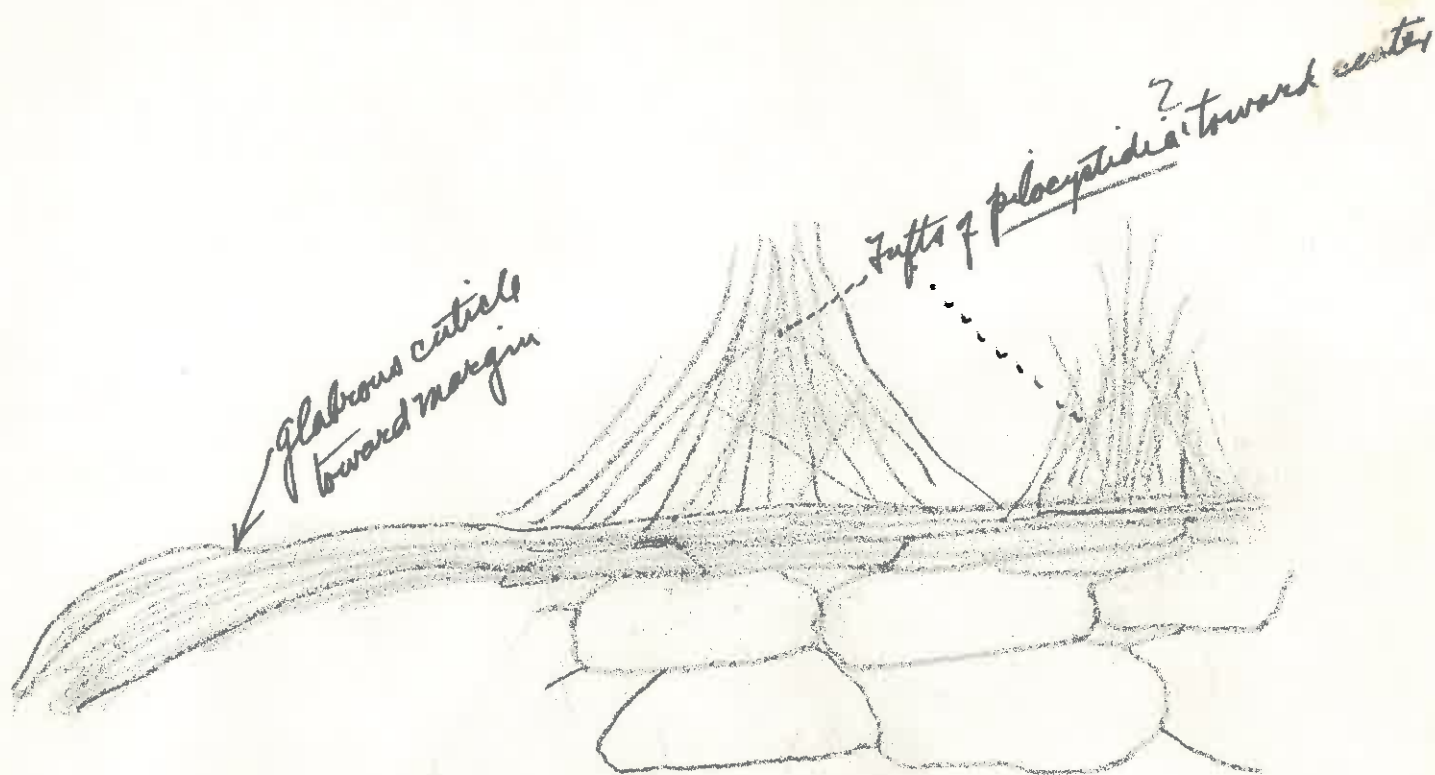
No. 23041 - x 3000  
(from spore-deposit)



No. 17666 - x 3000  
(from spore-deposit)

Epicutis of No. 17666:  
Same as No. 23041

No. 23041 - Russula densifolia (Reer.) Gill.



Epicutis: zone of appressed hyphae. Toward center of pileus bearing tufts of pileocephidia + hyphae

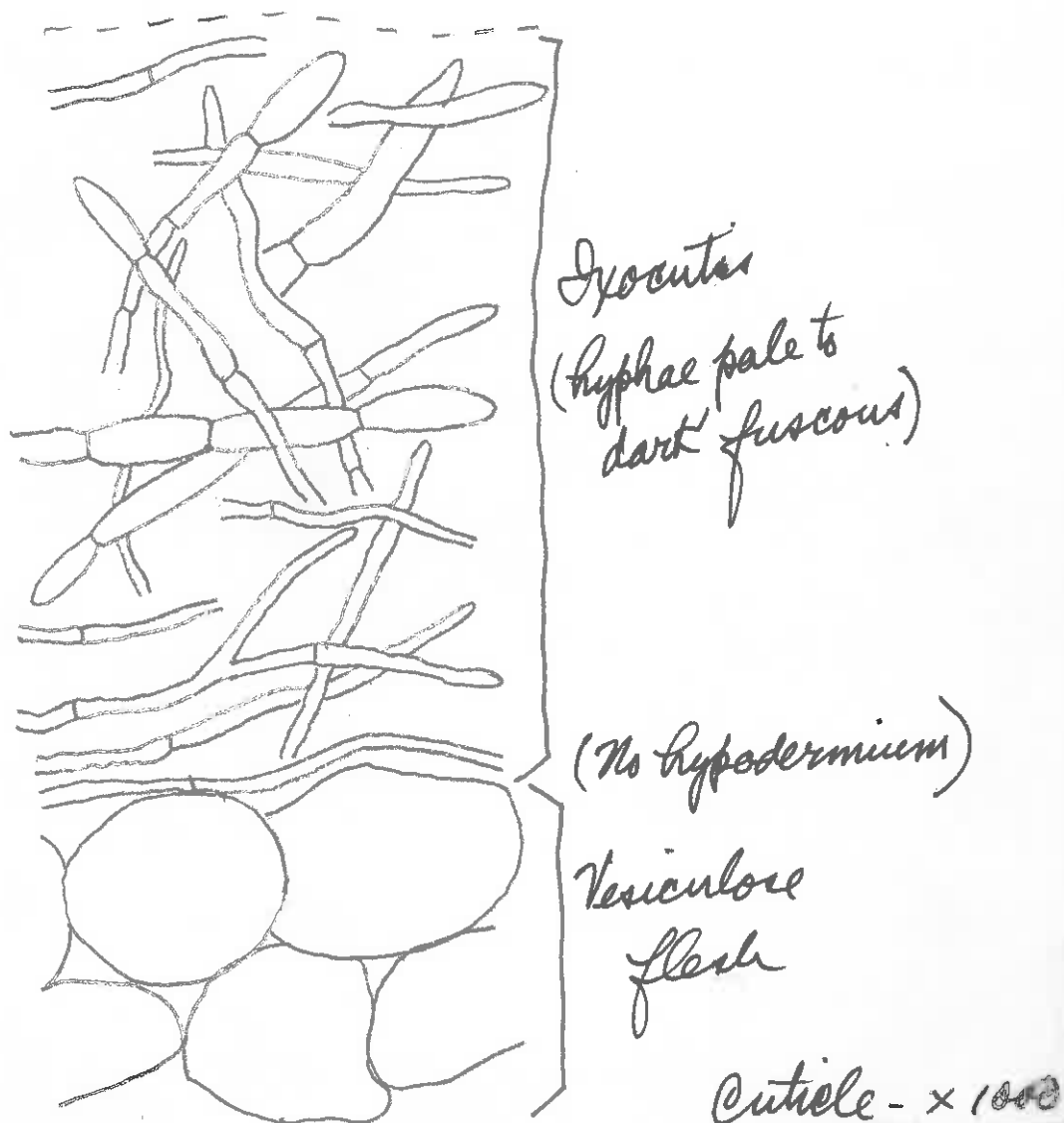
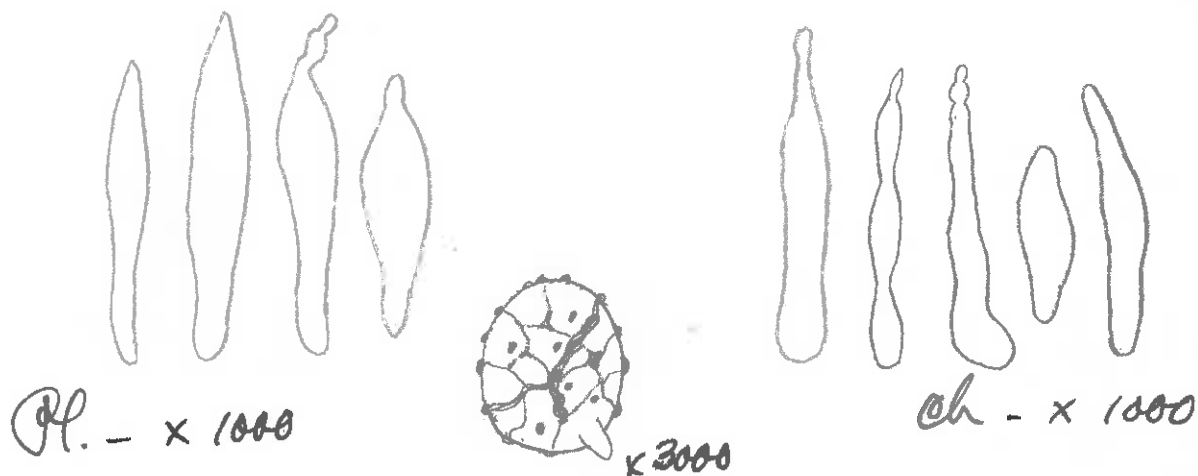
23486

RUSSULA DENSIFOLIA (Secr.) Gillet

Pileus 9 cm., depressed, "Saccardo's umber", margin pallid, short-tomentose, viscid when wet, cuticle separable on margin only, margin even. Flesh white, pinkish when cut, finally blackish, thick, firm; odor slight, taste strong (not acrid). Lamellae adnexed, remote, pale cream, edges becoming black where bruised, crowded, medium broad, some short, none forked. Stipe 6 cm. x 17 mm., white with dingy brown areas, pinkish where bruised, finally black, equal, solid.

Spores 6-7.5 x 4.8-5.5  $\mu$ , ellipsoid, warts 0.1-0.2 (0.3)  $\mu$  high, catenulate to some extent, with fine lines forming a more or less complete reticulum; in mass: white. Pleurocystidia 34-48 x 5-8 (10)  $\mu$ , scattered, few, inconspicuous, fusoid or ventricose, acute or appendiculate, necks at times moniliform, empty; cheilocystidia 22-44 x 3-7  $\mu$ , versiform, necks moniliform, obclavate, ventricose, empty. Cuticle a well-defined ixocutis, the zone 100-160  $\mu$  thick, hyphae disposed in many different directions, fuscous to pale, septate and often constricted, up to 7  $\mu$  broad. Hypodermium none.

*Russula* No. ~~23486~~  
*densifolia* (Secr.) Gillet

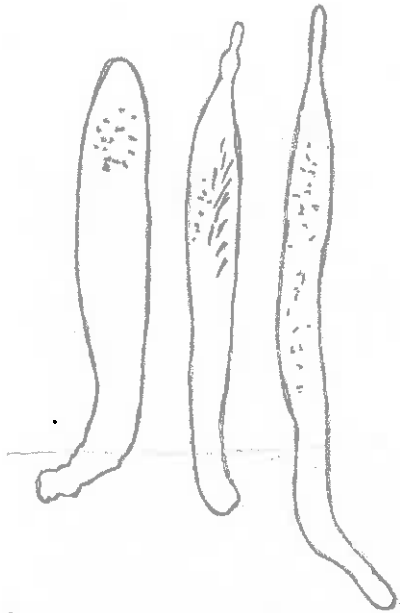


RUSSULA DENSIFOLIA (Secr.) Gillet

from Schaeffer's Herbarium  
(UT-24243)

Spores 8-9 x 6-7  $\mu$ , subglobose to short-ellipsoid, punctate, with fine lines forming an incomplete reticulum. Pleurocystidia 54-80 x 5-10  $\mu$ , clavate to slender-cylindric, rounded or mucronate, granular to banded; cheilocystidia 34-42 x 5-6  $\mu$ , clavate, obtuse, granular or empty. Cuticle an ixocutis 80-150  $\mu$  thick with a few more or less erect free ends of hyphae.

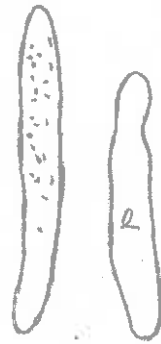
*Russula densifolia* Peck.  
 Schaeffer's Herbarium



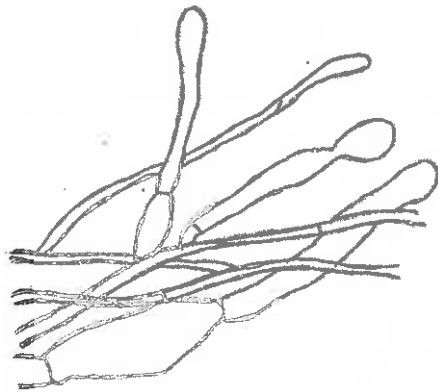
Pl - x 1000



x 3000



Ch - x 1000



Cilia - x 1000



23205 - *Russula densifolia* (Peck.) Gillet



24699

RUSSULA DENSIFOLIA (Secr.) Gill.

Photo

Pileus 6-11 cm., white, soon smoky brownish.

Lamellae adnate, rather close.

Stipe 4-5.5 cm. x 18-25 mm., white, when wounded the color red then black.



24699. *Rusula densifolia* (Feor.) Gill.

20444 - *Russula densifolia* (Seer.) Gill.

24708

RUSSULA DENSIFOLIA (Secr.) Gill.

Photo

Pileus white then smoky, red then black where wounded.  
Lamellae rather close, ventricose or plane, rather broad.

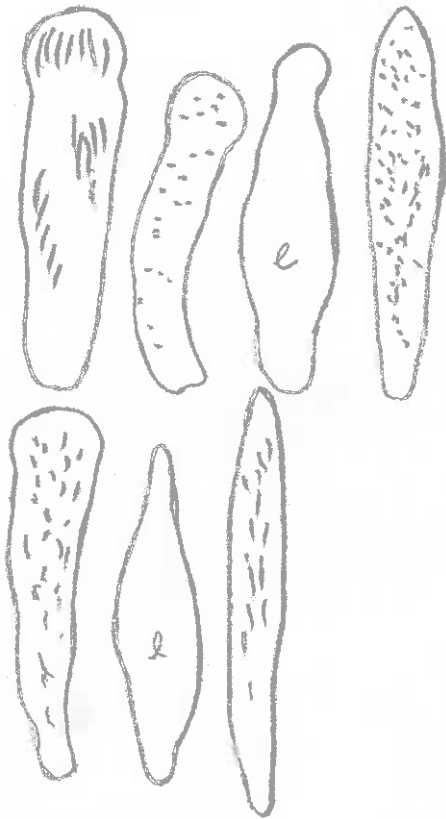
RUSSULA DEPALLENS (Fr.) Fr.

from Schaeffer's Herbarium  
(UT-24244)

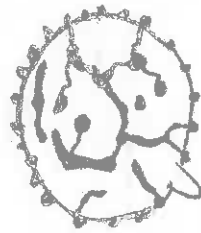
Spores 8-9.5 x 6-7.5  $\mu$ , ellipsoid to sub-ovoid, warts 0.2-0.4  $\mu$  high, with bands and a few fine lines. Pleurocystidia 38-56 x 6-12  $\mu$ , variable but mostly blunt-clavate, at times fusoid or ventricose, apices rounded to subacute, often subcapitate, empty, granular, or banded; cheilocystidia 32-40 x 6-8  $\mu$ , ventricose-clavate, sub-acute, empty or banded. Subhymenium indistinctly cellular. Cuticle a narrow gelatinous zone of tangled hyphae, many more or less erect, all resting on an hypodermium; pilocystidia present, scattered.

*Singer suggests that this name be abandoned  
(Sydowia 11: 243)*

*Lussula depallens* (Fr.) Fr.  
from Achaeffler's Herbarium



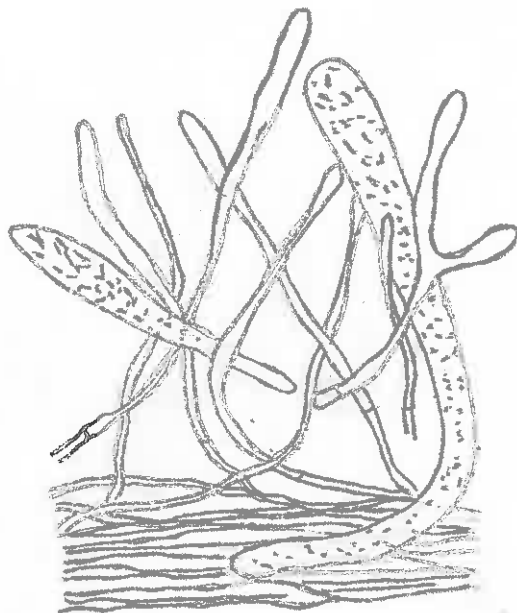
Pl - x 1000



x 3000



Ch - x 1000



Article - x 1000

RUSSULA DIABOLI Singer

Lilloa 22:719. 1949

(from Sydowia 11:270)

Pileus 2.6-5.2 cm. broad, convex then appressed, bright red, unicolorous, glabrous to slightly subvelutinous, slightly viscid when wet, drying rapidly and then opaque, with subobtuse, eventually rounded margin which is smooth, becoming sulcate when mature. Flesh white, unchanging; taste slowly then distinctly acrid. Lamellae attenuate-subfree, cream color and in some collections many with pink edge near the margin of pileus, then ochraceous yellow, anastomosing, subdistant or moderately close, broadest in the marginal third, rather broad (5 mm.). Stipe 3.5-6 cm. x 7-14 mm., mostly entirely or over large areas rosy red, more rarely partly white, partly pink, subrugulose, glabrous, solid, then stuffed, but not hollow, subequal, or tapering either upward or downward.

Spores 8-11 x 6.8-10.3  $\mu$ , warts 0.5-1.0  $\mu$  high, ornamentation of Singer II-IIIb and II-IV, reticulum incomplete, in mass: H, Crawshay. Pleurocystidia 45-70 x 9-17  $\mu$ , with a long (5-11.5  $\mu$ ) appendage, versiform; cheilocystidia present, more numerous. Epiautis an ixotrichodermium of filamentous hyphae, often attenuated at apex, with oleiferous hyphae, and numerous pilocystidia, 48-80 x 4-6  $\mu$ .

Notes on Type

Spores 8-10.5 x 7-8.5  $\mu$ , ellipsoid, warts 0.5-0.7  $\mu$  high, catenulate, isolated, or with some fine lines, Singer VIII,

(more, next page)

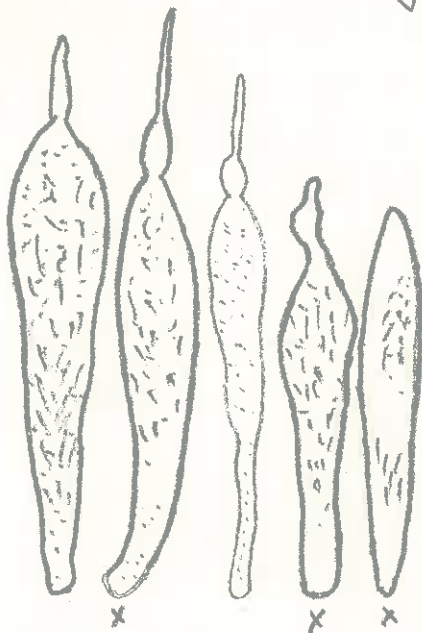
IIIb, VI. Pleurocystidia 50-83 x 7-13  $\mu$ , ventricose, appendiculate or acute, banded; cheilocystidia 33-51 x 7-10  $\mu$ , ventricose, acute, mucronate, or appendiculate, empty, granular, or banded. Epicutis of slender, more or less erect narrow hyphae the terminal elements of which are acute, with numerous pilocystidia resembling pleurocystidia.

Habitat and Distribution. - On humus and sandy soil, under oak, Florida, July.

Data on Type : No. 2817. I., Devil's Millhopper northwest of Gainesville, Alachua Co., Fla., July 18, 1943. Coll. + det. R. Singer. Marked Type.



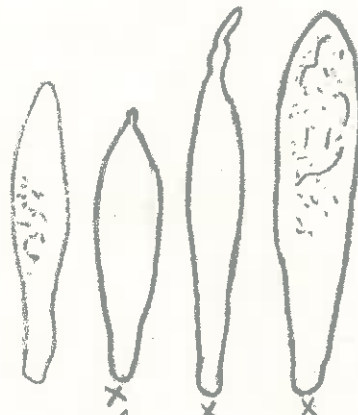
*Russula diaboli* Singer  
Type



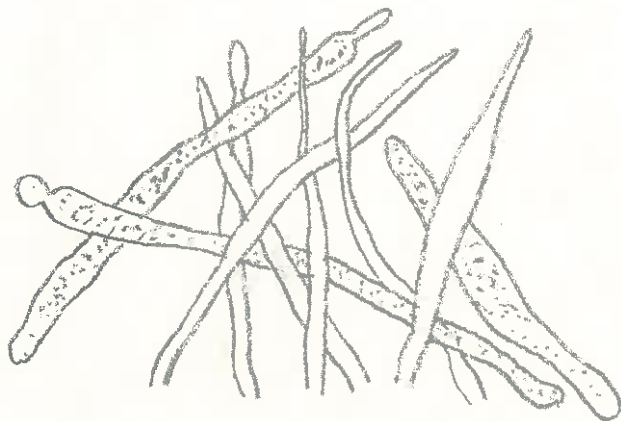
Sp - x 1000



x 3000



Ch - x 1000



Epicurus - x 1000

RUSSULA DISPARILIS Burl.

Mycologia 10:94. 1918

Pileus 2.5-6.5 cm. broad, convex, then applanate-depressed, "buckthorn brown" or "Sanford's brown", or "Hessian brown" in the center, margin "warm buff", or reddish brown all over except for paler areas which tend to become greenish when dried, viscid, mostly glabrous, cuticle partly or wholly separable, margin even or slightly tuberculate-striate. Context white, unchanging; odor none, taste mild (moderately acrid in young lamellae).

Lamellae adnexed, white then "light buff", close, medium broad, broadest in front, simple, equal or with very few lamellulae.

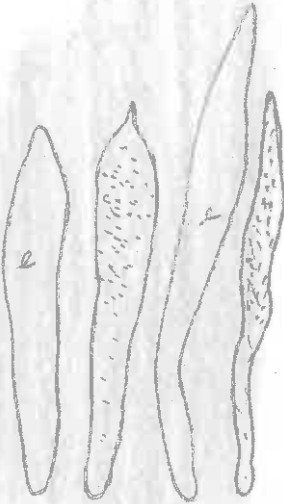
Stipe up to 6.5 cm. x 15 mm., white, glabrous, stuffed then hollow.

Spores 7.5-9 (10) x 6-7.5 (9)  $\mu$ , subglobose or ellipsoid, warts 0.3-0.5 (1.0)  $\mu$  high, isolated or somewhat catenulate, rarely with a few inconspicuous fine lines, in mass: E (Crawshay). Pleurocystidia 40-68 x 7-10  $\mu$ , clavate to fusoid, apices acute or mucronate, empty, granular, or banded; cheilocystidia 30-50 x 4-5  $\mu$ , clavate, at times appendiculate, granular. Subhymenium of small cells. Cuticle a turf of gelatinous hyphae, with a few, inconspicuous, granular pilocystidia. Hypodermium present.

Habit, habitat, and distribution. - In mixed conifer-deciduous woods, Mass. to Mich., July-Oct.

Observations. - Singer (Sydowia 11:245-247) gives spores 7.5-11.7 x 6.8-9.2  $\mu$ , warts 0.4-1.4  $\mu$ . Says it is colored similarly to vesca but differs in spores (spines lower and more connected in vesca).

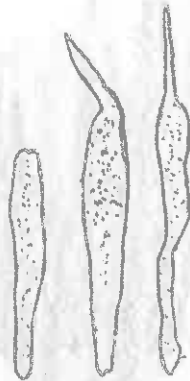
*Russula disparilis* Burl.  
Type



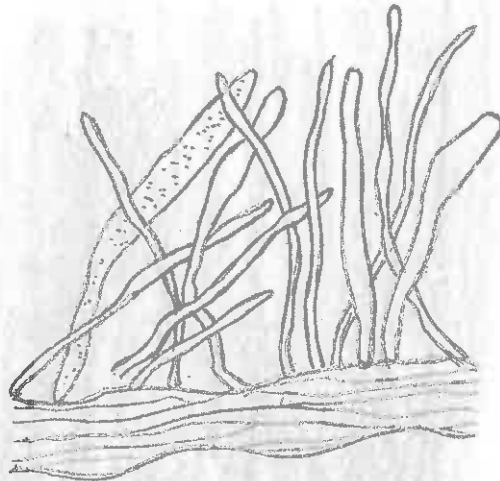
Sp - x 1000



x 3000



Ch - x 1000



Cuticle x 1000

RUSSULA EARLEI Peck

New York State Mus. Bul. 67:24. 1903

Pileus 4-11 cm. broad, expanded, more or less depressed, upturned, ~~and~~ wavy at maturity, <sup>cuticle</sup> ~~yellowish~~ not separable, subviscid, soon dry, appressed-fibrillose, becoming glabrous and rough-areolate, "warm buff," "chamois," <sup>"cinnamon buff,"</sup> ~~or~~ "honey yellow" or spotted "honey yellow," margin even, at times crenulate. <sup>Context</sup>  ~~Flesh~~ thick, compact, <sup>white to</sup> buff or pale yellowish; odor mild or strong and unpleasant; taste mild. Lamellae adnate, white, soon "honeyyellow," "cinnamon buff," or "warm buff," alternately long and short, few or none forking, subdistant to distant, ventricose, broad (up to 11 mm.), thin, tough, edges even. Stipe 3-6 cm. x 14-20 mm., "warm buff" or whitish, <sup>at first fibrillose,</sup> ~~rivulose,~~ glabrous, dry, tapering downward, solid or spongy. <sup>(8)</sup> Spores 5-7 x 4.5-5  $\mu$ , ellipsoid, minutely warty, <sup>0.2-0.3  $\mu$  high,</sup> no reticulum, fine lines rare and short, ornamentation of type VI (Singer) and like Schaeffer 1a-44 or rarely 2b-55, white in mass. <sup>44-53 x 3-6  $\mu$ , fusoid to clavate, granular or empty;</sup> Pleurocystidia ~~none~~; cheilocystidia cylindric, 30-44 x 4-5  $\mu$ , rare or more often absent. Gill-trama vesiculose, with scattered connective hyphae. Subhymenium <sup>of small cells.</sup> ~~not differentiated.~~ Epicutis a thin layer <sup>or tanned, slightly gelatinous</sup> ~~of slightly gelatinous~~ hyphae which are <sup>pleurocystidia none.</sup> 2-6  $\mu$  broad, with some more or less erect hyphae; Clamps none.

Habitat and Distribution. - On soil, under oak, hemlock, pine, and rhododendron, Tennessee, North Carolina, Virginia, Alabama, and Florida, June-September.

(more, next page)

Notes on Type  
(Box marked Type, Port Jefferson, leg. F. S. Earle, Aug.)

Spores  $5.5-7.5 \times 4-5 \mu$ , ellipsoid, reticulum none, rarely a few short, fine lines which are inconspicuous, warts  $0.2-0.3 \mu$  high, ornamentation of Singer type VI and Schaeffer 1a-44 or rarely 2b-55. Pleurocystidia <sup>absent or rare, when present inconspicuous</sup> none; cheilocystidia <sup>cylindric,  $46-50 \times 3-4$ , granular or empty;</sup> cylindric,  $32-48 \times 4-5 \mu$ , rare or more often absent, edges of lamellae often fertile. Gill-trama vesiculose, with a few <sup>of small, compact cells.</sup> connective hyphae. Subhymenium <sup>not differentiated.</sup> Epicutis a narrow zone of ~~some~~ <sup>a few scattered</sup> ~~gelatinous~~ narrow hyphae,  $2-6 \mu$  broad, with ~~some~~ <sup>a few scattered</sup> terminal hyphae more or less erect, often constricted at septa, <sup>3</sup>  $4-8 \mu$  broad, <sup>pileocystidia none.</sup> Clamps none.

Chemical reactions (dried material, the Type):

15% KOH: pileus and gill-trama yellowish-brown

10% Ferrous Sulfate: negative

Anilin: trama pink

Sulfoformalin: negative except for subhymenial zone which is rusty-brown

Sulfovanillin: (in thin sections) trama pale pink, hymenium red! in fragments from pileus, dark red or reddish-brown

Singer published studies on the Type in *Mycologia* 34:68. and in *Sydowia* 11: 143-145.



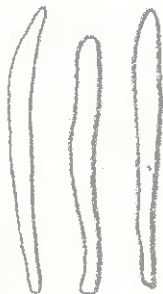
26313 - *Russula carlei* PK.

*Russula earlei* PK.

Type



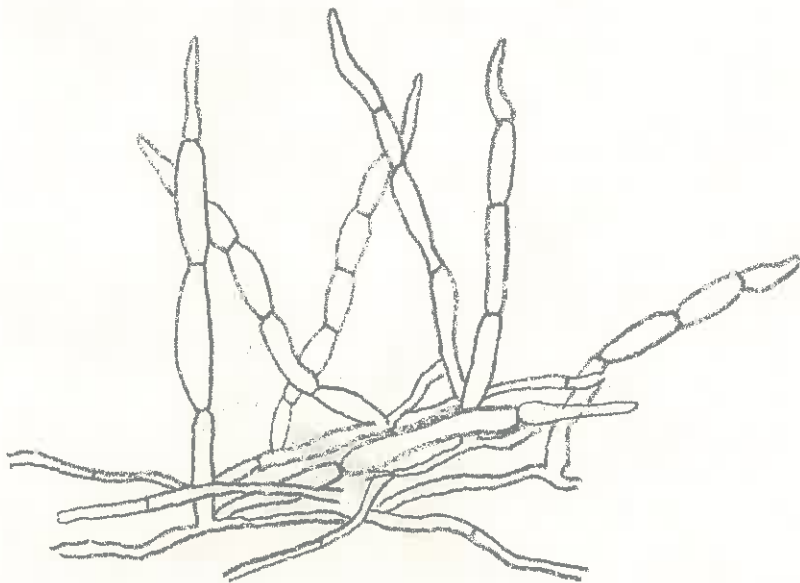
PP. -  $\times 1000$



ch -  $\times 1000$



$\times 3000$



RUSSULA ECCENTRICA Pk.

New York State Mus. Bull. 150:61. 1911

Pileus 6-17 cm. broad, depressed, margin becoming uplifted, dry, cuticle adnate, glabrous, slightly aerolate on disk, "Saccardo's umber" when young, finally paler, sordid gray, pinkish gray, to gray-brown (not well matched in Ridgway) or "isabella color" to "tawny," margin even. Flesh white, unchanging, medium thick, compact but brittle; odor strong, foetid, taste unpleasant. Lamellae adnate to adnexed, white when young, then "pale vinaceous pink," "light pinkish cinnamon," to "pinkish cinnamon," or "pinkish buff," becoming reddish-brown where wounded, "livid-brown" when dried, broad, sub-distant, alternating long and short, at times anastomosed in front, brittle, edges even. Stipe 4-8 cm. x 13-40 mm., dingy white, at times tinged pinkish-vinaceous, equal, at times compressed, occasionally slightly eccentric, usually tapering at base, glabrous, spongy-solid.

Spores 6-8 x 5.5-6.5  $\mu$ , subglobose to ellipsoid, reticulum of fine lines, warts low, Singer IV, Schaeffer 5c-48 and 4c-62, white in mass. Pleurocystidia numerous, brownish, deeply imbedded, often not projecting, cylindric, at times more or less mucronate, 46-130 x 4-6  $\mu$ ; cheilocystidia similar, 28-50 x 4-6  $\mu$ . Gill-trama vesiculose. Subhymenium of small cells. Epicutis of repent hyphae, with a few free ends more or less erect.

(more, next page)



Habitat and Distribution. - On soil, in deciduous and mixed woods, Tennessee and North Carolina, June-September.

Discussion. - Our Nos. 19155, 22962, and 21995 resemble the Type closely. Singer calls this Russula nigricans (Bull. ex Fr.) Fr. ssp. eccentrica (Pk.) Singer (Sydowia 11:146.)

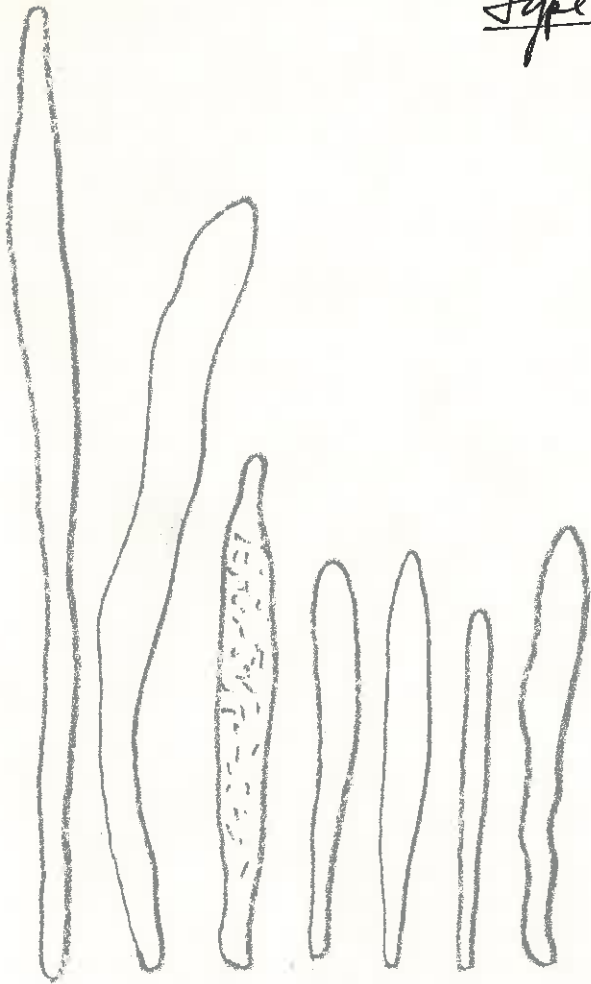
Notes on Type (R. eccentrica Pk.)

(Box marked Type. St. Louis, Mo., leg. N. M. Glatfelter, 31 July 1909)

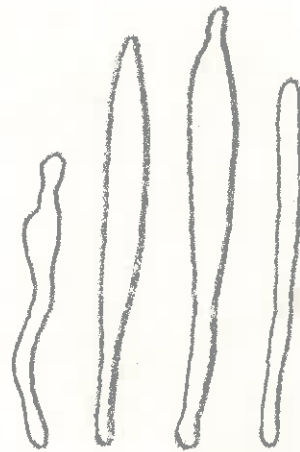
Spores 7-9 x 5.7-7.5  $\mu$ , ellipsoid to subglobose, with fine, faint more or less continuous lines, warts very low and often indistinct (and then the wall appears smooth), ornamentation Schaeffer 5c-48 and 4c-62. Pleurocystidia 44-127 x 4-8  $\mu$ , fusoid to subclavate, at times sub-mucronate, many banded, rather numerous, projecting near the edge, elsewhere buried in hymenium and inconspicuous and often arising deep in the trama and then very long (100  $\mu$  or more); cheilocystidia 38-56 x 2.5-6  $\mu$ , cylindric to fusoid, at times slightly mucronate, numerous. Gill-trama vesiculose. Subhymenium of small cells. Epicutis of repent hyphae, with a few free ends and more or less erect.

Russula eccentrica PK.

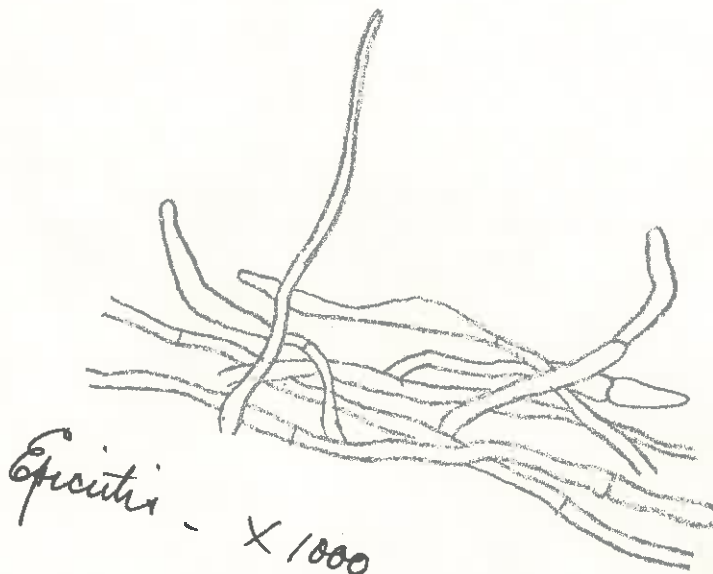
Type



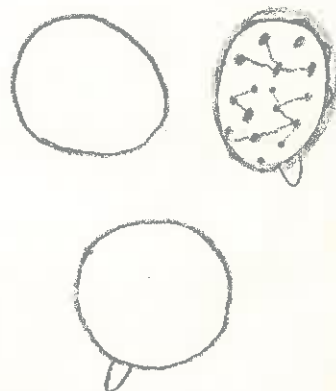
Pl. - X 1000



Ch. - X 1000



Epicutis - X 1000



X 3000

24875

RUSSULA ECCENTRICA Pk.

Photo

Pileus 7-13 (16) cm., smoky-brown, dry. Context pinkish buff, thick.

Lamellae adnate, pinkish, subdistant, broad, alternately long and short.

Stipe 5-11 cm. x 23-32 mm., white then dingy, pinkish when wounded, then sordid, equal, solid.



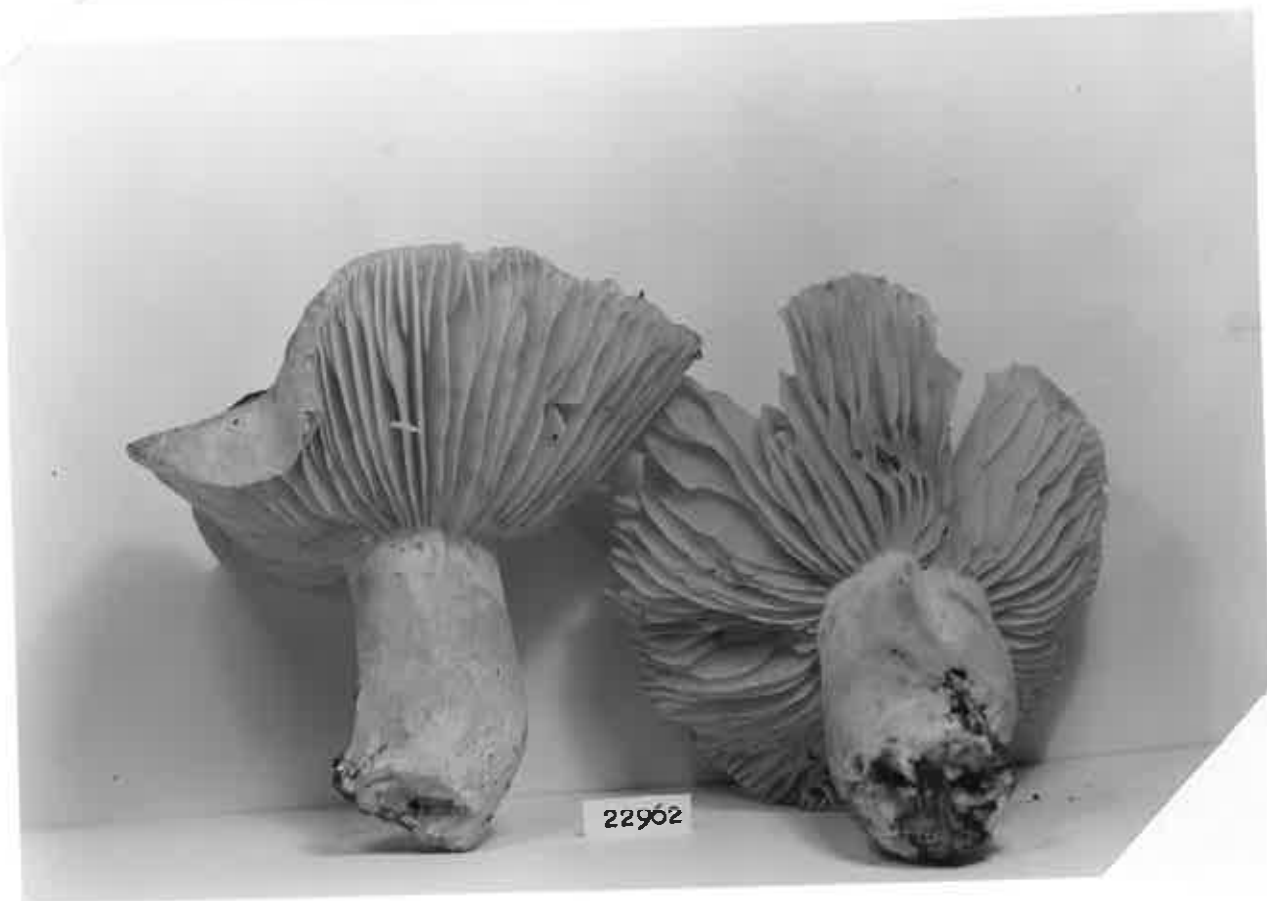
21829 - *Russula eccentrica* PK.



12171 - *Russula eccentrica* PK



19155 - *Russula eccentrica* PK.



22962 - *Lussula eccentrica* PK. -  $\times \frac{5}{6}$



20880 - *Russula eccentrica* PK.





24875 - *Russula excentrica* PK.



29167 - *Russula eccentrica*

RUSSULA EMETICA Fr.

Epicr. Myc., p. 357. 1838

(NAF 9:234)

"Agaricus emeticus Schaeff., Fung. Bavar. 4:Ind. 9. 1774

"Agaricus sylvaticus Lam., Fl. Fr. 1:106. 1778

"Amanita rubra Lam., Encyc. 1:105. 1783

"Pileus fleshy, convex to plane or depressed, 5-10 cm. broad; surface rosy, soon blood-red, then fulvous or sometimes ochroleucous or entirely white, viscid when wet, shining, with separable pellicle, glabrous; margin striate-tuberculate to sulcate: context red next to the pellicle, otherwise white, acrid, without special odor; lamellae pure-white, equal, free or slightly adnexed, broad, subdistant; stipe white or reddish, subequal, spongy to solid, firm, elastic, even, 4-8 cm. long, 1-2 cm. thick: spores globose, echinulate, 8-10 u in diameter."— *white in mass (Kauffman)*.

Habitat and Distribution. - On soil, in conifer and deciduous woods, Tennessee (?), North Carolina, South Carolina, and Florida, July-October.

RUSSULA EMETICA Fr.

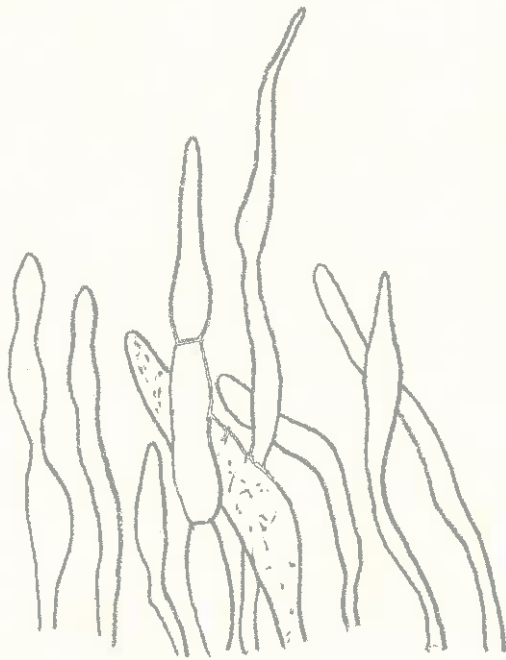
Notes on Peck's Collection, East Schaghticoke, August 4, 1904,  
leg. Charles H. Peck.

Spores (7.5) 8-9 x (5.7) 6.3-8  $\mu$ , ellipsoid, warts 0.6-0.9  $\mu$  high, prominent, numerous, with fine lines forming a more or less complete network, Singer IIIa, Schaeffer 8f and 9c. Pleurocystidia 45-63 x 5-10  $\mu$ , fusoid or ventricose, apex pointed or subcapitate; cheilocystidia 32-45 x 5-6  $\mu$ , fusoid or ventricose, apex subcapitate, often more or less appendiculate. Gill-trama vesiculose. Subhymenium of small cells. Epicutis of rather erect hyphae. In some sections numerous, variously-disposed (repent, erect) pilocystidia, 40-200 x 2-3 (4)  $\mu$  were found; in others no pilocystidia found.

This seems to be R. emetica ssp. emeticella (Singer)  
Singer, Sydowia 11:234. 1957.

*Russula emetica* Fr.

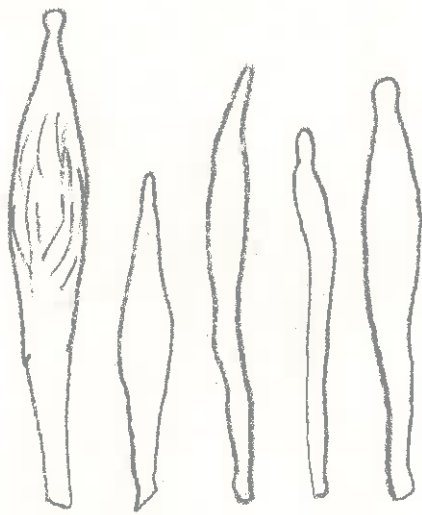
Peck Coll. East Ashaghticoke, Aug. 4, 1904.



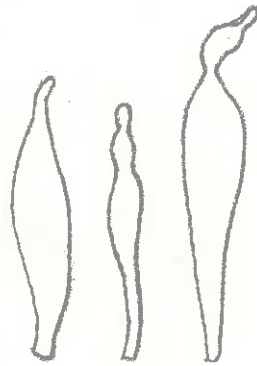
Epicentris - x 1000

Russula emetica Fr.

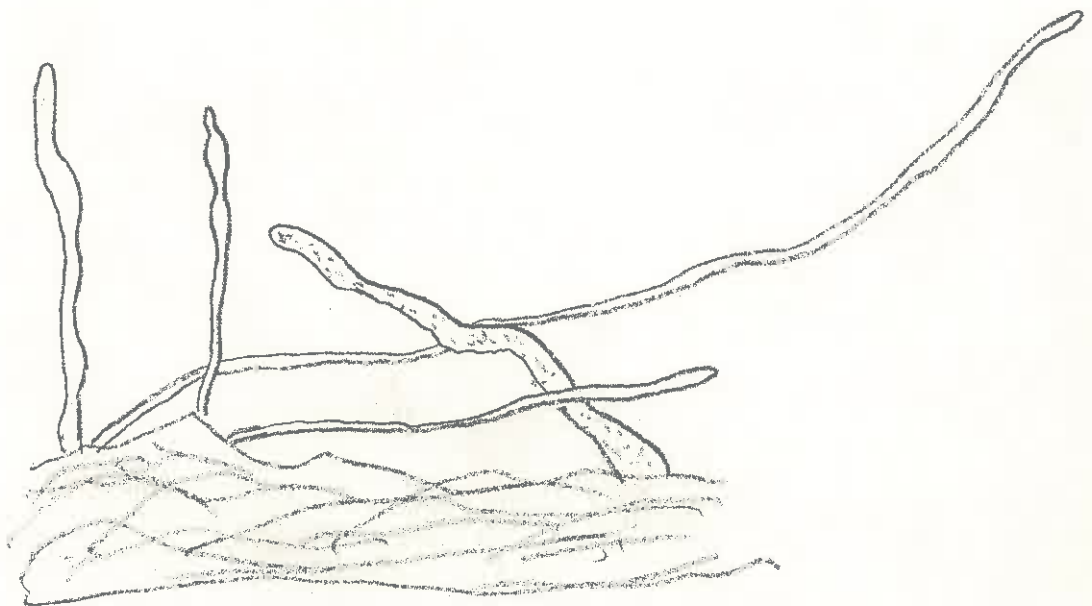
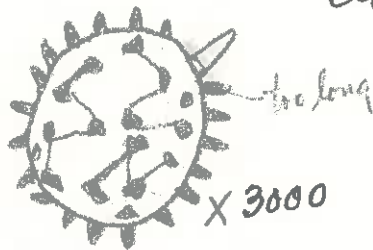
Peck's Coll., East Schaghticoke, Aug 4, 1904



Pl. - X 1000



Ch. - X 1000



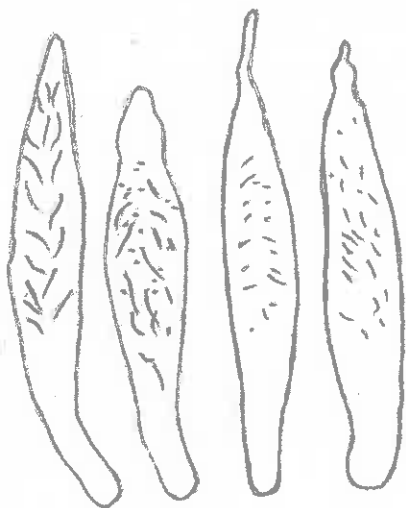
RUSSULA EMETICA Fr.

Schaeffer's Herbarium

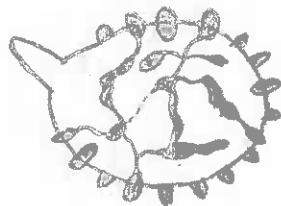
Spores 9-10 x 7-8  $\mu$ , ellipsoid to subovoid, warts 0.5-0.8  $\mu$  high, catenulate or isolated with bands and lines forming a more or less complete reticulum. Pleurocystidia 52-64 x 10-11  $\mu$ , ventricose, apices acute, often appendiculate, banded; cheilocystidia 51-55 x 6-10  $\mu$ , fusoid to ventricose, acute or mucronate, granular or banded. Cuticle a distinct zone of gelatinous hyphae, which are tangled, - erect, semi-erect, to repent - with numerous, conspicuous pilocystidia.

Spore characters (size, and height of ornamentations) suggest that this would be R. emetica ssp. emeticella (Sing.) Sing.

*Cuscuta emetica* Fr.  
Schaeffer's Herbarium



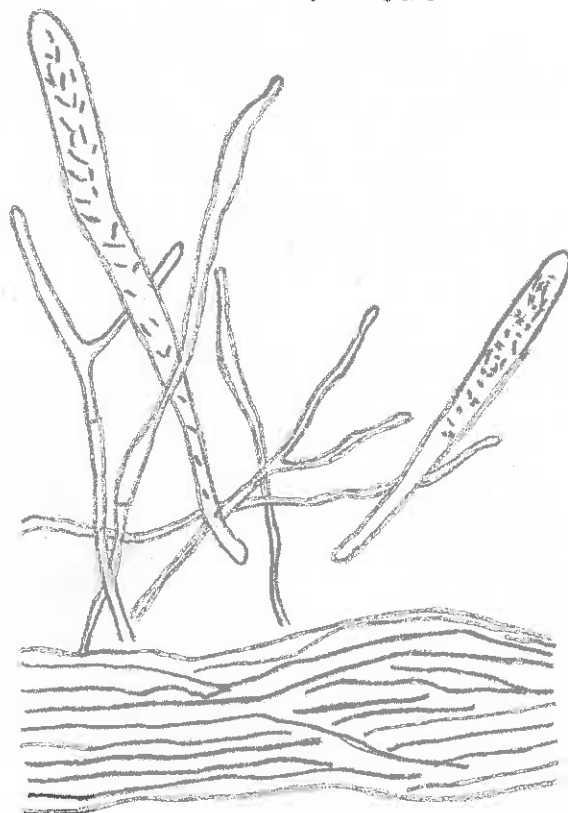
Pl - x 1000



x 3000



Ch - x 1000



Cuticle - x 1000



24765

RUSSULA EMETICA Fr.

Pileus "Jasper pink" to "light Jasper red", viscid, separable, striate. Context white, acrid, fragile.

Lamellae adnate, white.

Stipe white, fragile.

Spores 8-10 x 7-8  $\mu$ , more or less reticulate with fine lines, at times with bands (often not); warts 0.5-1.0  $\mu$  high, in mass: A (white). Pleurocystidia 50-60 x 9-11  $\mu$ , subfusoid to clavate, apices acute or appendiculate; cheilocystidia similar. Cuticle of the emetica-type; pilocystidia numerous.

RUSSULA EMETICA Fr. (?)

No. 9672

(near R. vinacea Burl.)

Spores 7.5-9.5 x 6.5-7.5  $\mu$ , ellipsoid to subglobose, warts 0.6-1.0  $\mu$  high, reticulum of rather fine lines, Singer IIIa, Schaeffer 8f-52. Pleurocystidia 48-81 x 7-12  $\mu$ , fusoid to subventricose, mostly banded, a few without any bands; cheilocystidia 35-45 x 5-8  $\mu$ , fusoid, a few banded. Gill-trama vesiculose. Subhymenium a very narrow band of small cells. Epicutis a gelatinous zone of interwoven hyphae, bearing clavate, banded pilocystidia, some imbedded, others erect and forming a turf or almost a turf. Otherwise similar to Peck's R. fragilis.

Near R. vinacea Burl. which has less reticulate spores.

*Russula emetica* Fr. (?)

No. 9672



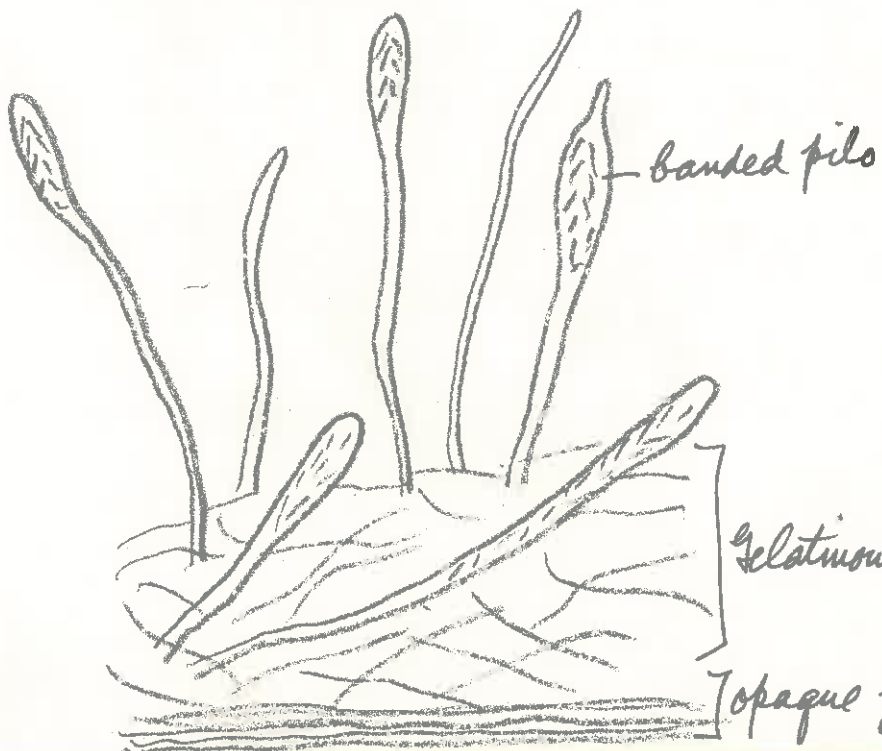
Pl. - x 1000



x 3000



Ch. - x 1000



Banded pile

Gelatinous zone

Opaque zone.

24554

RUSSULA EMETICA Fr.

Pileus "Jasper red", margin at times "Jasper pink", viscid, pellicle separable half-way, glabrous, even, becoming slightly striate. Context white, unchanging, pink under cuticle; odor mild, taste acrid.

Lamellae adnate, few forking at base, few lamellulae, white, finally pale cream, unchanging, close, rather narrow, narrowed behind.

Stipe white, unchanging, faintly rivulose, equal, spongy.

Spores in deposit: white. Spores 7-8 x 5.5-6 (7)  $\mu$ , ellipsoid, warts 0.2-0.4  $\mu$  high, reticulate with medium-broad bands and fine lines. Pleurocystidia numerous, conspicuous, fusoid, 50-66 x 7-10  $\mu$ , apices acute, banded; cheilocystidia 40-52 x 6-8  $\mu$ , fusoid, apices acute, or appendiculate, or small-capitate, banded. Subhymenium a narrow zone of flattened cells. Cuticle of the emetica-type.

24828

RUSSULA EMETICA Fr.

Pileus "Jasper pink", glabrous, viscid, pellicle partially separable, striate. Context fragile, white; odor slight, taste acrid.

Lamellae adnate, white, few forking behind, few short, close, medium narrow.

Stipe white, rivulose, equal or base slightly clavate-enlarged, spongy.

Spores 6-7.5 x 5-6  $\mu$ , warts 0.2-0.4  $\mu$  high, more or less reticulate with fine lines and bands, in mass: white.

RUSSULA EMETICA ssp. ALPESTRIS (Boud.) Singer

Russula nigrodisca Pk. Fur Seals N. Pacif. 3:583. 1899.

(see next page)

RUSSULA NIGRODISCA Pk.

Fur Seals N. Pacif. 3:583. 1899

Pileus 3-6 cm. broad, viscid, pellicle separable half way, disk dark purple to blackish, elsewhere "pompeian red," glabrous, margin striate. Flesh thin, white, fragile; odor slight or none, taste acrid. Lamellae adnexed, white, nearly subdistant, medium broad, somewhat narrowed behind, none short, none forking, edges even. Stipe 2.5-8 cm. x 5-12 mm., white, unchanging, slightly reticulated (under lens), nearly equal, spongy.

Spores 8-9.5 x 6.5-8  $\mu$ , ellipsoid, at times asymmetrical, warts 0.3-0.6  $\mu$  high, with ridges and fine lines forming a reticulum, Singer IIIa, Schaeffer 8f-52, white in mass. Pleurocystidia 55-70 x 6-10  $\mu$ , clavate, often appendiculate and banded; cheilocystidia 33-50 x 4-7  $\mu$ , clavate or fusoid, some banded. Epicutis a gelatinous zone of interwoven hyphae, some projecting free, with clavate pilocystidia imbedded or with free ends.

Habitat and Distribution. - On soil, in spruce woods, Tennessee and North Carolina, July-September.

Discussion. - Singer (Mycol. 35:149) says this is an arctic form of R. emetica, and seems not to be different from R. emetica ssp. alpestris (Boud.) Singer.

My No. 21027 agrees well with the type of R. nigrodisca Pk.

RUSSULA NIGRODISCA Pk.

Notes on Type

(Marked Type. St Paul Island, Behring Sea, J. Macoun, Sept. 1896.)

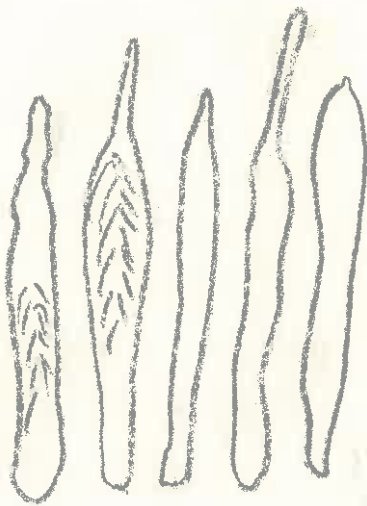
Spores 8.5-10 x 7-7.5  $\mu$ , ellipsoid, at times asymmetrical, warts 0.2-0.4  $\mu$  high, with ridges and fine lines forming a more or less complete reticulum, Singer IIIa, Schaeffer 8f-52 and 9c-53. Pleurocystidia 48-60 x 5-8  $\mu$ , subclavate to cylindric, appendiculate to mucronate, at times banded; cheilocystidia 38-53 x 4-6  $\mu$ , clavate or fusoid, apex acute or capitate, some banded. Epicutis a gelatinous zone of interwoven hyphae, some hyphae erect and projecting, with several clavate pilocystidia which are imbedded or projecting more or less erect.

Singer (Mycologia 35:149) says this is an arctic form of R. emetica, and does not seem to be different from R. emetica ssp. alpestris (Bořd.) Singer.



Russula nigrodumca Pk.

Type.



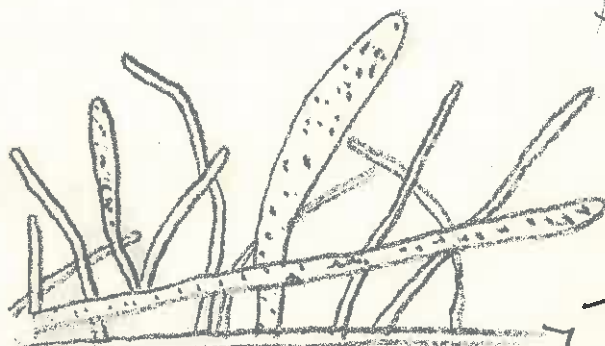
Sp. - x 1000



x 3000



Ch - x 1000



interwoven  
+ cystidia

opaque,  
parallel

See next  
sheet

Lusula nigrodisca PK.

Type



X 1000

*Epicuris*

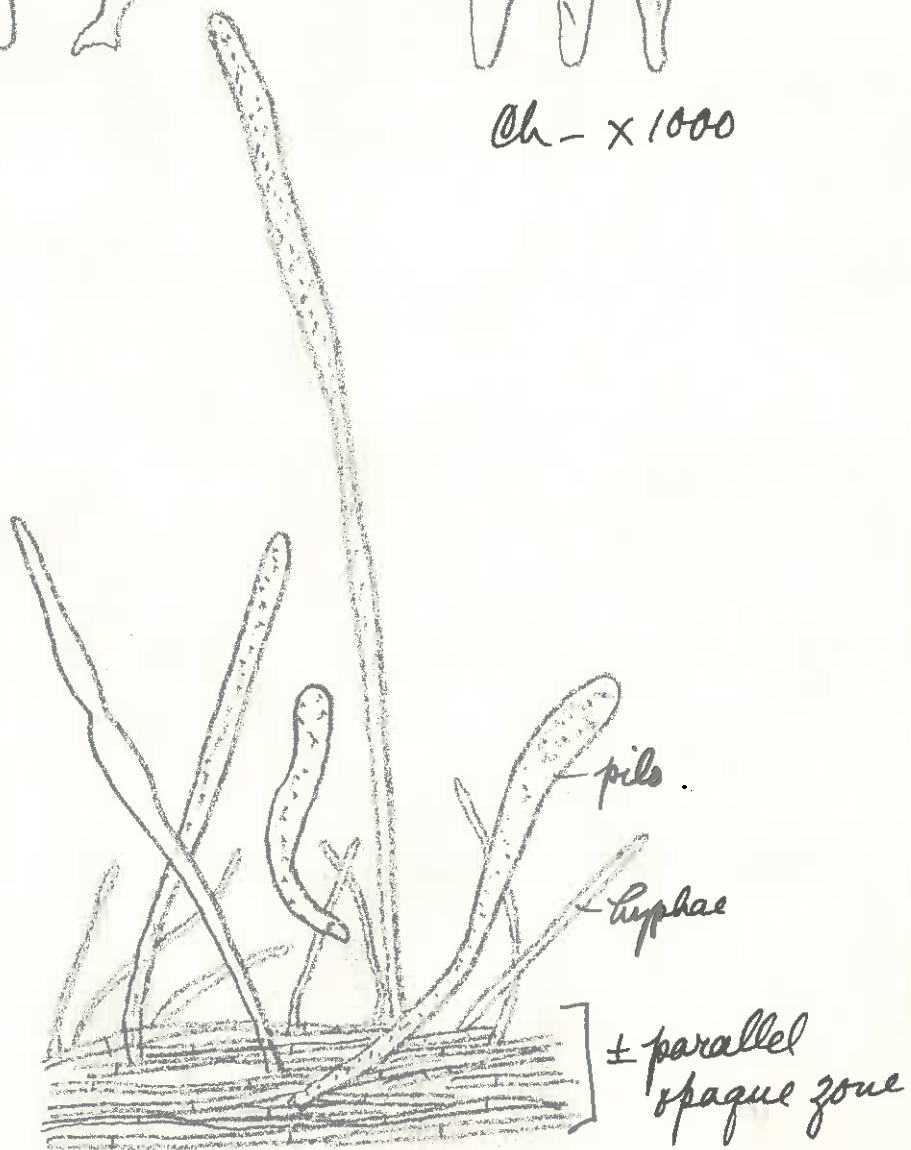
*Russula nigrodiscalis* PK.  
No. 24027.



PP- x 1000



Ch- x 1000



Russula emetica sp. aquosa (Seclair) Sing.  
Revue de Myc. 1: 292. 1936

Russula aquosa Seclair, Bull. Soc. Myc. Fr. 48: 303. 1932

Russula fragilis var. carminea J. Schaeffer, Ann. Myc.  
31: 461. 1933.

(Hydowia 11: 236)

RUSSULA EMETICA ssp. EMETICELLA (Sing.) Sing.

Sydowia 11:234. 1957

Russula emetica ssp. fragilis f. emeticella Singer Beih.  
Botan. Centralbl. 49.II;307. 1932.

Russula fragiloides Murr. Lloydia 8:265. 1945.

(Sydowia 11:234-235)

Pileus 2.5-6 cm. broad, convex and often umbilicate, expanding-depressed, rose red, flesh red, "Nopal red," "coral red," "jasper red" (R.), viscid, glabrous, smooth, later tuberculate-sulcate on the margin, with obtuse margin. Flesh white, unchanging; odor none, or slightly fruity, taste promptly acrid. Lamellae adnexed to free, white, unchanging, mostly simple, equal or with very few lamellulae inserted, rather narrow to fairly broad (2-6 mm., mostly 4-5 mm. broad), subclose to crowded, with entire edges (not fimbriate). Stipe 3.2-4.2 cm. x 5-11 mm., white, glabrous, subequal or tapering upward, subrugulose, stuffed, eventually spongy-hollow or hollow.

Spores 8.2-9.2 x 6.8-7.5  $\mu$ , warts 0.5-0.9  $\mu$ , Singer type IIIa, with occasionally a few short ridges (IV-II), the connecting lines crossing each other without a wart at the crossing point in at least a large number of spores; basidia slightly smaller than in ssp. lacustris; all other microscopical characters as in the latter.

Habitat and Distribution. - On soil and moss pads, in deciduous woods, Florida (Singer, Sydowia 11:234, says it occurs from Canada to Florida.).

(more, next page)

Discussion. - I have not seen the type of R. emetica ssp. fragilis f. emetiella Singer, but have studied the type of R. fragilioides Murr. (see below).

Notes on Type of R. fragilioides Murr.

Spores 7-<sup>9</sup>9.5 x 6.5-7.5  $\mu$ , ellipsoid to globose, warts 0.5-0.8  $\mu$  high, ~~some fused to form~~ <sup>with</sup> short bands or ridges, <sup>and</sup> ~~with~~ a few to many fine lines, Singer IIIa, IV, white in mass, Crawshay A. Pleurocystidia <sup>48</sup>58-75 x <sup>7</sup>8-11  $\mu$ , fusoid to ventricose, apex usually mucronate, at times capitate, banded; cheilocystidia 34-45 x 4-7  $\mu$ , fusoid, mucronate, banded. Epicutis a conspicuous <sup>zone</sup> ~~band~~ of <sup>somewhat tangled</sup> ~~gelatinous~~ hyphae, <sup>with</sup> ~~in which~~ clavate, ~~minutely~~ banded or granular pilocystidia (dermatopseudocystidia) ~~are imbedded, a few protruding,~~ 40-100 x 3-7  $\mu$ . r

RUSSULA EMETICA ssp. EMETICELLA (Sing.) Sing.

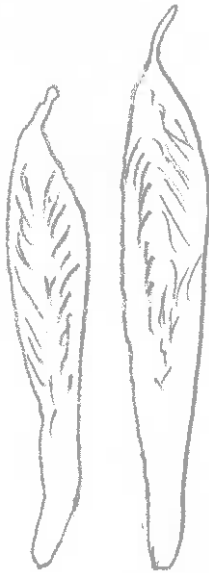
(No. 23460)

Pileus 6 cm., "coral pink," disk "coral red," viscid, pellicle separable three-fourths way, glabrous, striate. Flesh white, unchanging; odor mild or slight, taste acrid. Lamellae adnate, seceding, white, then pale cream, close, broad, equal, few forked behind. Stipe 4 cm. x 8 mm., subequal, white, unchanging, spongy.

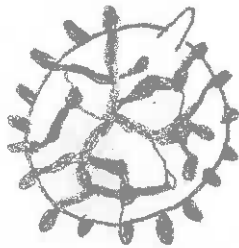
Spores 7.5-10 x 7-8  $\mu$ , ellipsoid, warts 0.4-0.8  $\mu$  high, with a reticulum of broad bands and a few fine lines, in mass: just off white, Crawshay A to A-B. Pleurocystidia 63-74 x 9-11  $\mu$ , fusoid, appendiculate, banded; cheilocystidia 38-54 x 6-8  $\mu$ , fusoid, acute or appendiculate, granular. Cuticle a gelatinous zone, with imbedded slender hyphae which are variously disposed, some non-septate, others septate, pilocystidia numerous.

This seems to be closer to ssp. emeticella than any of the others.

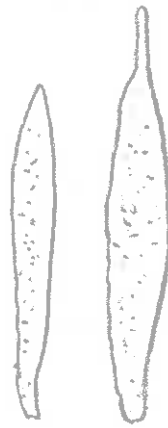
*Russula* ~~No. 23460~~  
*emetica* ssp. *emeticella* (Sing.) Sing.



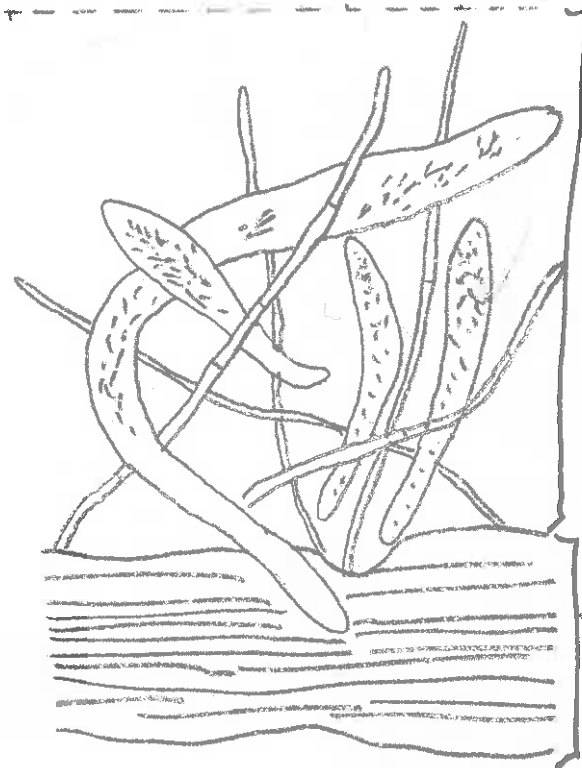
Sp. - X 1000



X 3000



Ch. - X 1000



Gelatinous zone

Hypodermium

Cuticle - X 1000



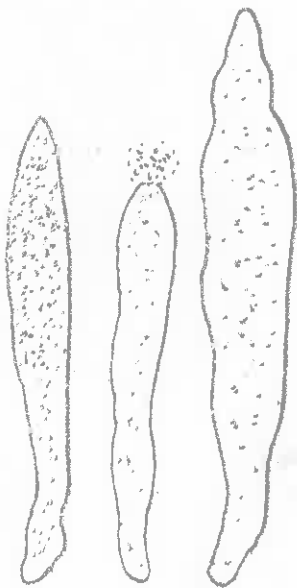
22251 RUSSULA EMETICA ssp. EMETICELLA (Singer) Singer

Pileus  $\frac{1}{4}$  cm. broad, flat, vinaceous pink, minutely velvety or pruinose, viscid, pellicle separable, margin even. Flesh rather firm, white, unchanging; odor mild, taste acrid. Lamellae white, unchanging, close, medium broad or narrow, several forked behind. Stipe 3 cm. x 10 mm., white, hard, solid, equal.

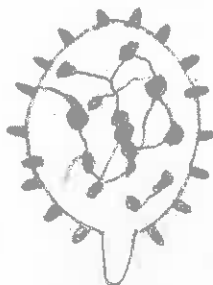
Spores 8.5-10 x 6.3-7.5  $\mu$ , ellipsoid to subvoid, warts 0.5-0.8  $\mu$  high, isolated or with some fine lines, a few short-catenulate, Singer IIIb, VI, VIII, white in mass (Crawshay A). Pleurocystidia 61-105 x 9-17  $\mu$ , ventricose, more or less acute, granular; cheilocystidia 30-37 x 4-5  $\mu$ , few, clavate, mucronate or appendiculate, granular or empty. Epicutis a rather dense turf of numerous pilocystidia and numerous hyphae, many hyphae septate.

Habitat and Distribution. - On soil in deciduous woods, Louisiana, December.

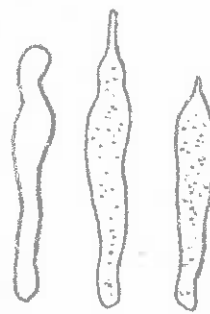
*Russula emetica* ssp. ~~*fragilis*~~ *emeticella* (Sing.) Sing.  
No. 22254



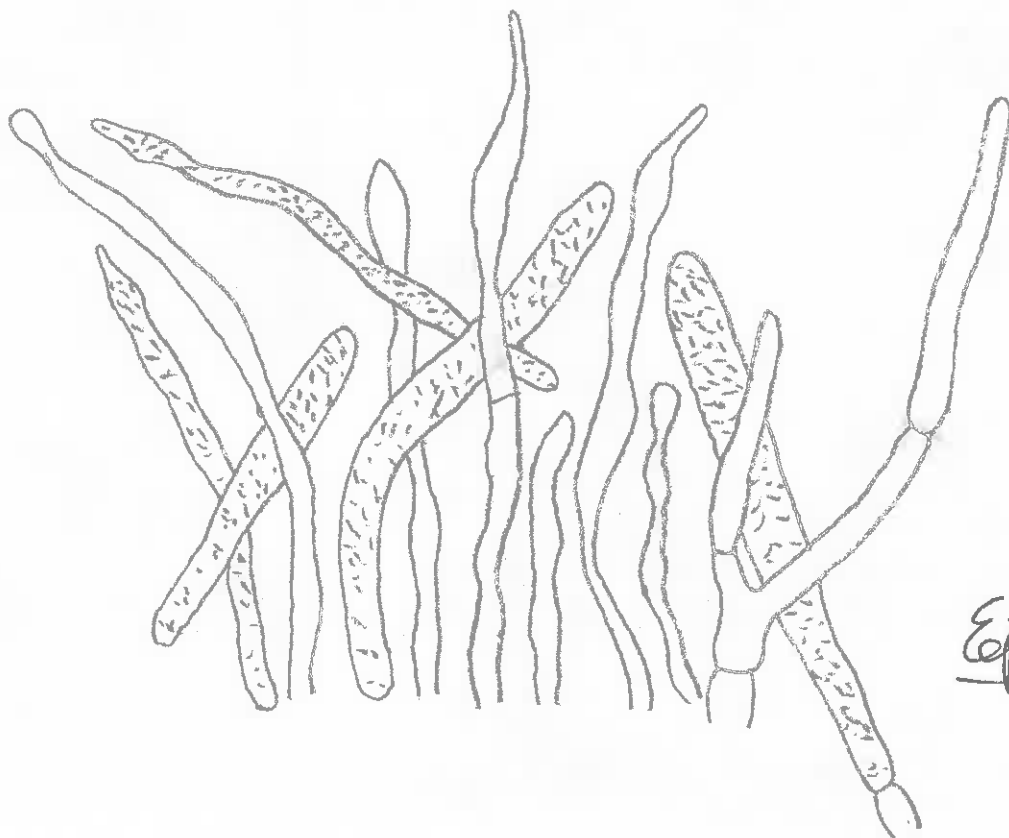
Pl - x 1000



x 3000



Ch - x 1000



Epicutes - x 1000

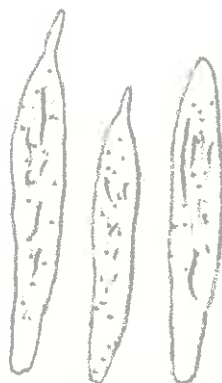
*Russula fragilioides* Murr.  
Type



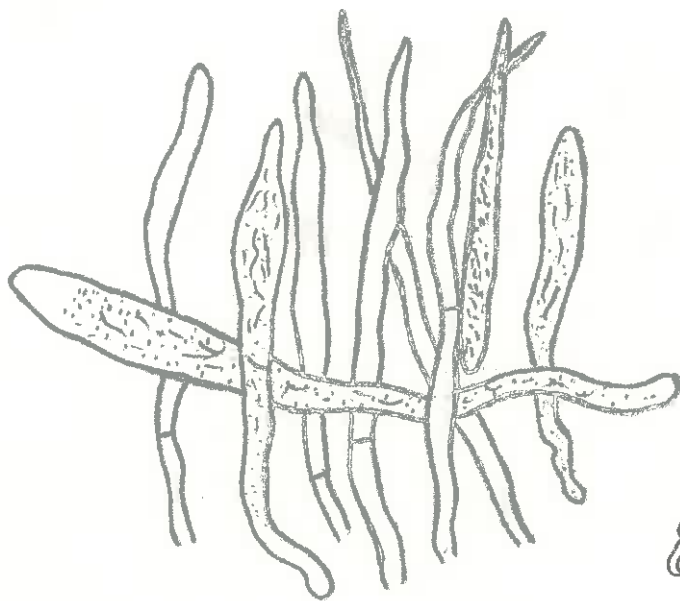
Pl - X 1000



X 3000



Ch - X 1000



Epicutis - X 1000

*emetica* ssp.  
RUSSULA FRAGILIS (Fr.) Sing.

Epicr. Myc. p. 359. 1838

Pileus 2-6 cm. broad, convex, expanding, viscid, "Jasper red" on disk, marginal third "light coral red," often "coral pink" all over, pellicle separable, glabrous, margin nearly even when young, becoming tuberculate-striate. Flesh white, pale pink or white next to cuticle, medium thin; odor mild, taste promptly acrid. Lamellae adnate to adnexed, white, none short, few forked, ventricose, medium broad, close, edges flocculose or entire. Stipe 3-7 cm. x 7-10 mm., white, glabrous, rivulose, spongy, then hollow, fragile, equal, dry.

Spores 8-9.5 x 7-8.5  $\mu$ , ellipsoid, warts numerous, 0.7-1.2  $\mu$  high, with few fine lines, and some broad bands, Schaeffer 8d-42, white in mass. Pleurocystidia numerous, fusoid to clavate, banded, 50-90 x 9-12  $\mu$ ; cheilocystidia similar, 40-48 x 7-9  $\mu$ , some banded. Gill-trama vesiculose. Subhymenium of small cells. Epicutis a gelatinous zone of interwoven hyphae, with numerous hyphae and banded clavate pilocystidia (40-68 x 5-8  $\mu$ ) both the hyphae and pilocystidia more or less erect and forming a turf.

Habitat and Distribution. - On soil, in coniferous and deciduous woods, Tennessee and North Carolina, June-August.

Discussion. - This is close to R. emetica ssp. emeticella (Singer) Singer, although it has more pilocystidia and a more distinct turf than some other collections. Compare with No. 12188, which has no turf.

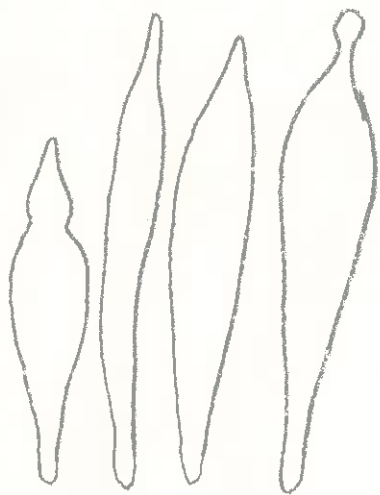
RUSSULA FRAGILIS Fr.

Notes on Peck's Coll., <sup>Emex Co.,</sup> North Elba, September

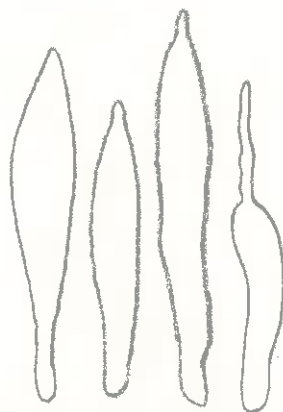
Spores 8-9.5 x 6.5-7.5  $\mu$ , ellipsoid, warts 0.7-0.9  $\mu$  high, fine lines few, broader bands rather numerous in some spores, Schaeffer 9c (more common). Pleurocystidia 45-63 x 5-11  $\mu$ , fusoid or ventricose, apex mucronate, appendiculate or subcapitate; cheilocystidia 37-45 x 6-8  $\mu$ , fusoid-ventricose. Gill-trama vesiculose. Subhymenium of small cells. Epicutis a gelatinous zone of ~~interwoven~~ hyphae, with clavate pilocystidia (often banded) more or less imbedded or projecting, and some slender hyphae projecting.

This is close to R. emetica ssp. emeticella (Singer) Singer.

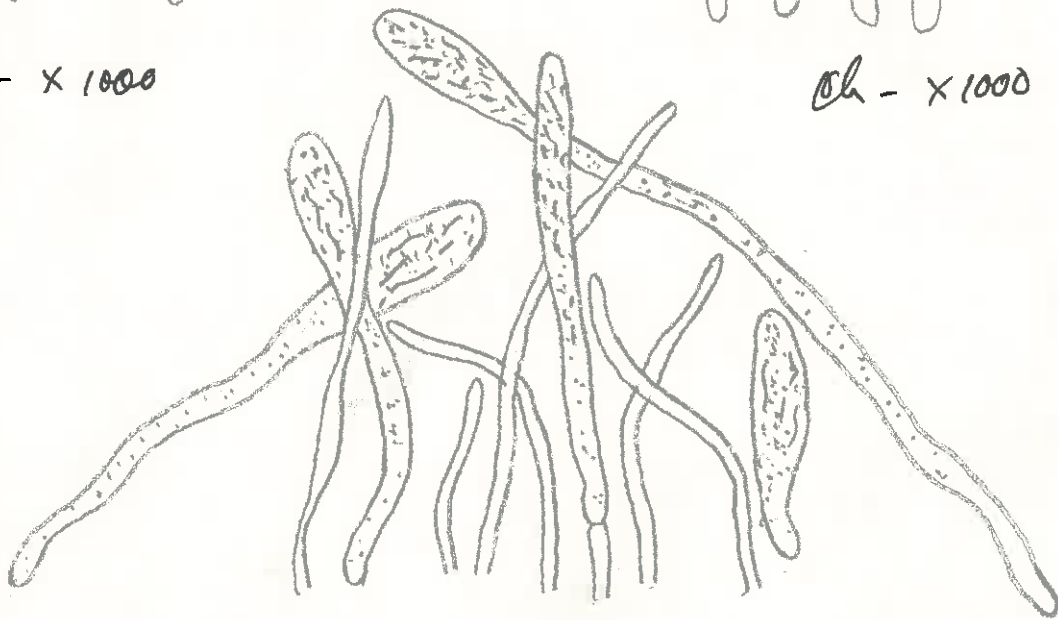
*Russula fragilis* Fr.  
Peck's Call. North Elba, Sept.



Sp - x 1000

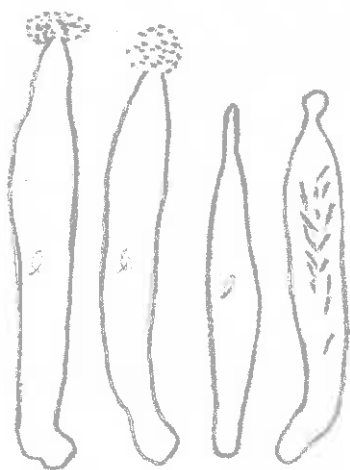


Sp - x 1000

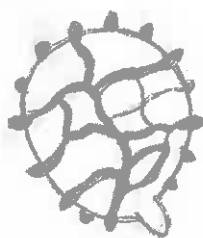


Epicutis - x 1000

*Russula fragilis* (Fr.) Fr.  
Schaeffer Herbarium No. 57



Pl - x 1000



x 3000



Ch - x 1000

Cuticle of the  
omethic-type (see drawing,  
next page)

RUSSULA FRAGILIS (Fr.) Fr.

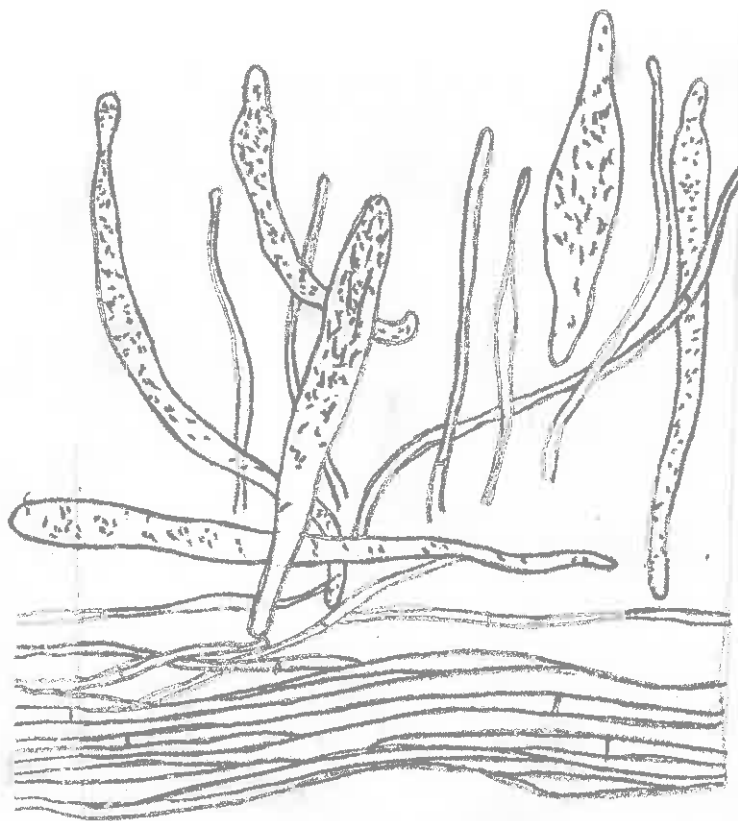
Schaeffer's Herbarium, No. 57  
Potsdam, Oct. 6, 1937  
Det. Schaeffer

Spores 8-9 x 7-8  $\mu$ , ellipsoid to globose, warts 0.1-0.3  $\mu$  high, with a reticulum of broad bands. Pleurocystidia 48-55 x 6-8  $\mu$ , ventricose, cylindric, mucronate to capitate, often with an exudate, empty or banded; cheilocystidia 32-52 x 5-8  $\mu$ , clavate, cylindric, to fusoid, apices rounded to appendiculate, granular or banded. Subhymenium cellular. Cuticle of the emetica-type.



*L. fragilis* (Fr) Fr.

Schaeffer Herb. No. 57.



Cuticle X 1000

Russula fragilis Fr.

No. 12188

Spores 8.5-10 x 6.5-7.5  $\mu$ , warts 0.7-0.9  $\mu$  high, with ridges and some fine lines, white in mass. Pleurocystidia 50-61 x 6-8  $\mu$ , fusoid-ventricose, many banded; cheilocystidia few, similar, not banded. Epicutis a zone of interwoven gelatinous hyphae, with a few more or less erect, scattered hyphae, no pilocystidia, no turf.

Compare No. 20921, with a turf.



12188 - *Russula fragilis* Fr.



20921 - *Russula fragilis* Fr.

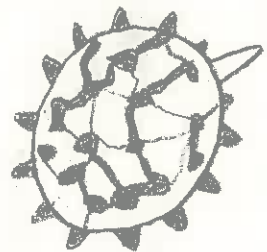
Russula fragilis Fr.  
No. 20921.



Pl. - x 1000



Ch. - x 1000



x 3000



Furf of hyphae  
+ pileocystidia

Glabrous interwoven  
hyphae

Opaque  $\pm$  parallel hyphae

RUSSULA EMETICA ssp. LACUSTRIS Singer

Revue de Mycologie 15:133. 1950

Russula perlactea Murr., Lloydia 6:213. 1943.  
? Russula emeticiformis Murr., Mycologia 30:362. 1938.  
~~(Sydowia 11:232)~~

Pileus (2) 3-5.2 (6.2) cm., convex and umbilicate, then expanded-depressed; "jasper red," "nopal red," "scarlet red," or partly "coral pink," finally with large white areas, <sup>or in age entirely white ("R. perlactea")</sup> viscid, pellicle entirely separable, glabrous, at times tuberculate-sulcate. Flesh white, unchanging; odor none, or in age of honey, taste becoming acrid. Lamellae attenuate-subfree, white then pallid, at times brownish or yellowish on the edges, medium broad, broadest in front, close or subdistant, equal or some short, some forked, edges even. Stipe 2-4.2 cm. x 11-19 mm., white, finally tinged "pale pinkish cinnamon," or somewhat yellowish, glabrous, equal or tapering downward, solid or stuffed.

Spores 9-14 x 7-12  $\mu$ , warts 0.8-1.6  $\mu$  high, Singer IIIa, lines not merging into one of the spines, in mass: A, Crawshay. Pleurocystidia 82-92 x 11-12  $\mu$ , ventricose to fusoid, at times subcapitate, some appendiculate or mucronate, numerous near edge; cheilocystidia (not mentioned). Epicutis of hyphae and numerous pilocystidia, imbedded in a gelatinous mass.

Habitat and Distribution. - On soil, more rarely on decayed wood, near conifers and deciduous trees, Florida, November-April.

Discussion. - Singer (Sydowia 11:234) says it is probably widely distributed and mistaken for R. emetica ssp. emetica.

Common in Florida. Differs from all other subspecies of R. emetica in the higher spore ornamentation. Singers lists R. emeticiformis Murr., R. subacris Murr., and R. pervirginia Murr. as doubtful synonyms.

RUSSULA PERLACTEA Murrill

Lloydia 6:213. 1943

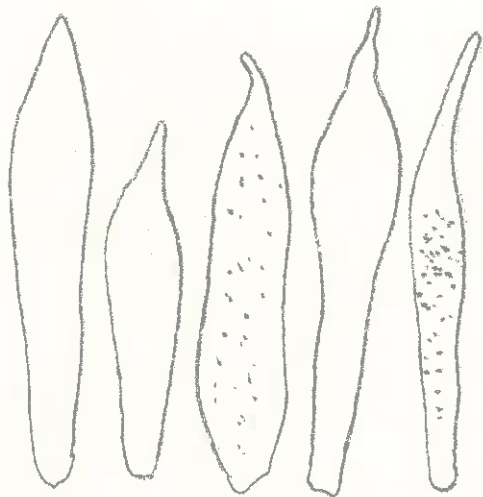
Pileus 4-7 cm. broad, convex to plane or slightly depressed, pure-white, unchanging, glabrous, slightly viscid, pellicle readily separable, margin even. Flesh rather thick, white, unchanging; odor none, taste distinctly acrid at once. Lamellae adnate, white, unchanging, broad, rather distant, very few forked, edges even. Stipe 3-5 cm. x 8-18 mm., white, unchanging, equal, smooth, glabrous, solid.

(718572. near Gainesville Fla.  
Notes on Type 1-28-41. W.A. Murrill.)

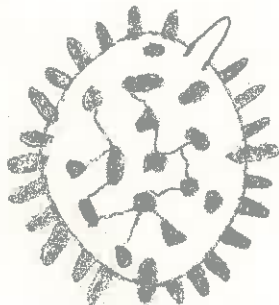
Spores 10-13.5 x 8.5-10.5  $\mu$ , ellipsoid, warts 0.8-1.7  $\mu$  high, numerous, more or less cylindric, some isolated, with some fine lines, Singer IIIb, VI, chalk-white, in mass (Murrill). Pleurocystidia 47-62 x 6 x 13  $\mu$ , ventricose, subfusoid, or obclavate, acute or appendiculate, granular or empty; cheilocystidia 33-53 x 6-9  $\mu$ , ventricose or clavate, granular, apices rounded, mucronate, or button-like-capitate, granular.

Habitat and Distribution. - On leaf-mold, under laurel-oak and pine, Florida, January-February.

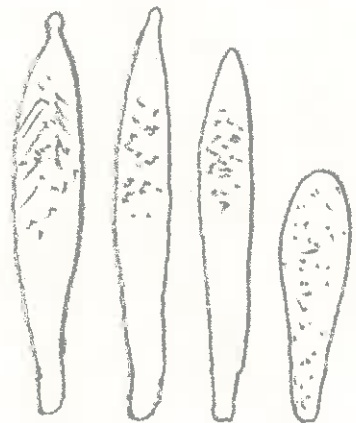
*Russula perlactea* Murr.  
Type



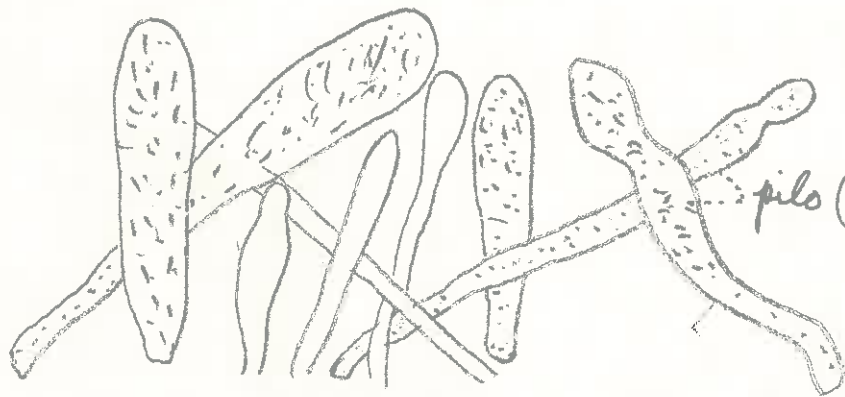
Pl. - x 1000



x 3000



Ch. - x 1000



pilo (numerous)

Epicentis - x 1000



RUSSULA EMETICIFORMIS Murrill

Mycologia 30:362. 1938

Pileus 4-6 cm. broad, convex to expanded, smooth, glabrous, viscid, purple, blackish on the disk, pellicle separable only at the margin, which is even, concolorous. Flesh white, odor mild, in age or on drying, of honey, taste strongly acrid at once. Lamellae adnate, crowded, medium broad, some furcate, white, brownish in dried specimens. Stipe 3-5 cm. x 6-10 mm., equal or enlarged below, glabrous, white, solid.

Notes on Type

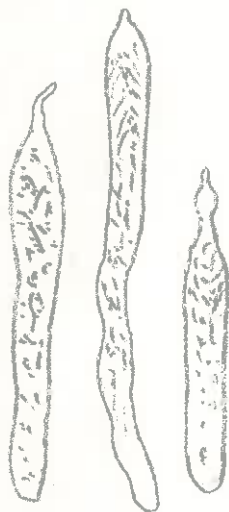
Spores 8-11 x 7-9  $\mu$ , ellipsoid to subglobose, warts 0.6-1.3  $\mu$  high, isolated, or with few to many fine lines, Singer IIIb, V, probably white. Pleurocystidia 42-82 x 5-7  $\mu$ , fusoid or clavate, more or less mucronate, banded. Epicutis of slender, more or less nodulose to cylindric hyphae, with several clavate, minutely banded pilocystidia, 50-80 x 4-6  $\mu$ .

Habitat and Distribution. - In rotten log humus, Florida, December.

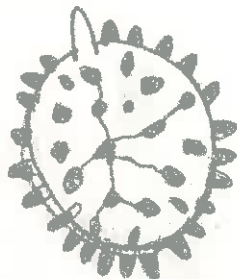
Discussion. - Singer (Sydowia 11:232) doubtfully calls this a synonym of R. emetica ssp. lacustris Sing. He states further (p. 234) that it agrees well except that the color of the pileus is slightly different: in emetiiformis it is purple with a blackish disk; in emetica lacustris it is red, *in some caps partly* ~~to~~ rose or coral pink.

*Crassula emeticiformis* Murr.

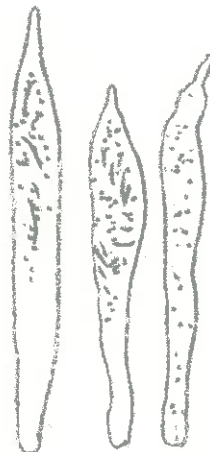
Part 7 Type (U.T. - No. 21231)



Cl - X 1000



X 3000



Ch - X 1000



Epicutis - X 1000

RUSSULA EXPALLENS Gill.

Tableaux analytiques des Hymen., p. 49. 1884

Pileus 4-6 cm. broad convex, then plane, "vinaceous purple," "Indian-lake," disk blackish, viscid, cuticle separable on the margin, glabrous, margin even. Flesh white, tinged rose next to the cuticle; odor mild, taste acrid. Lamellae narrowly adnate, white, then pale yellow, equal or a few short ones, some forking behind, broadly rounded in front, medium broad, close. Stipe 5-8 cm. x 9-13 mm., tinged like the pileus, base white, tapering upward, spongy.

Spores 7-10 x 6-8  $\mu$ , ellipsoid to ovoid, warts 0.6-0.8 (1.0)  $\mu$  high, a few short catenulate, with fine lines, Singer IIIb, IV, VIII, in mass: pale cream, Crawshay B. Pleurocystidia 56-88 x 8-12  $\mu$ , numerous, fusoid to ventricose, apices rather acute, occasionally capitate, at times with an exudate, granular or banded; cheilocystidia 40-71 x 6-7  $\mu$ , ventricose to subclavate, apices rounded, capitate, or appendiculate, empty or banded. Epicutis a rather narrow zone of slender hyphae, several of the ends of which are more or less erect.

Habitat and Distribution. - On soil, in fir woods, North Carolina, August.

(No. 19702)

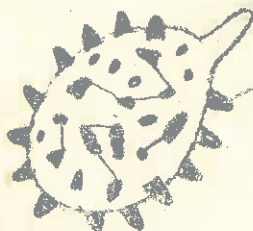
Discussion. - This <sup>^</sup>seems to be R. expallens Gill. sensu Burlingham. It is near R. Queletii Fr., sensu Schaeffer, who lists R. expallens as a synonym.

*Russula exspallens* Gill.

No. 19702

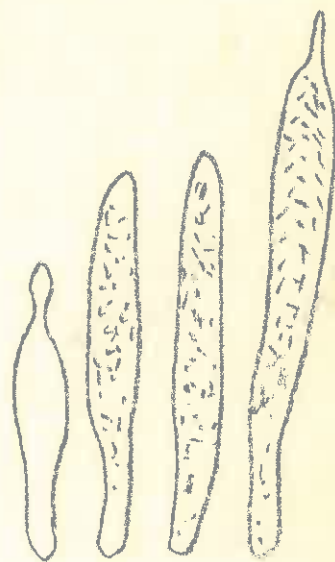


Sp. - x 1000

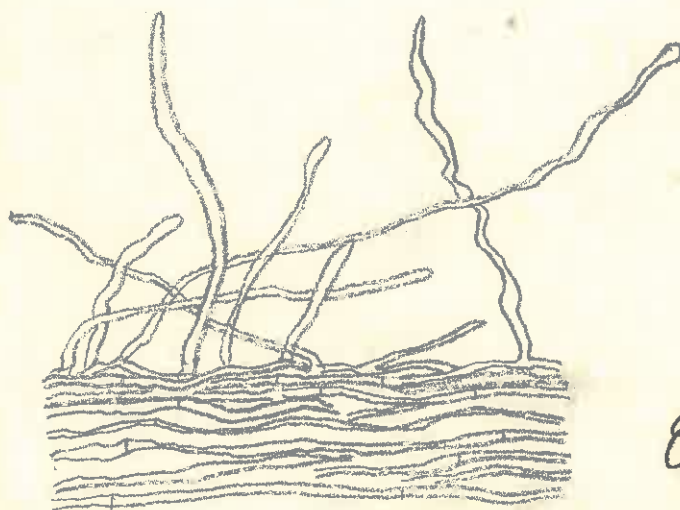


x 3000

(too long)



ch. - x 1000



Epith. x 1000